

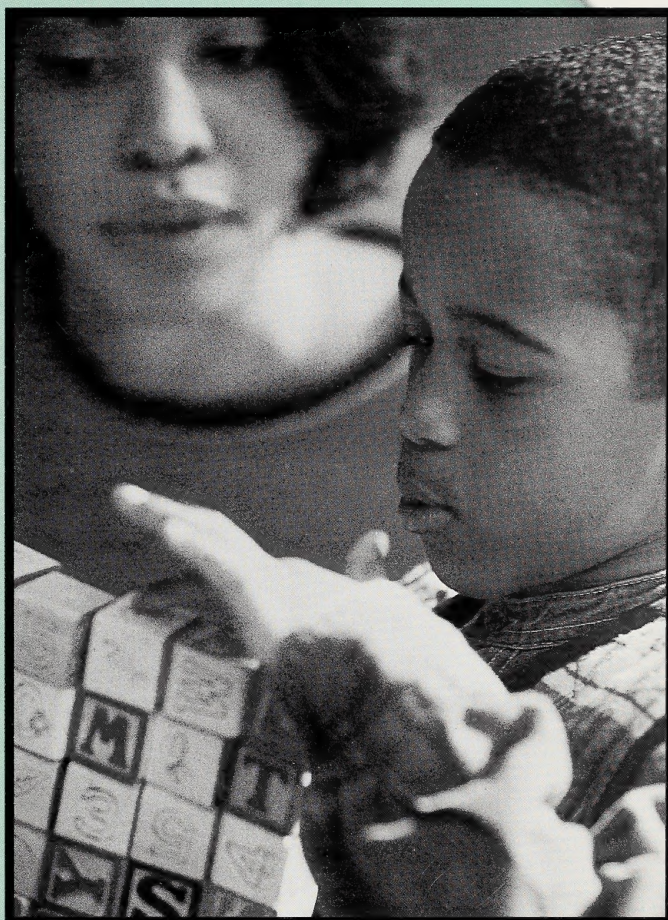
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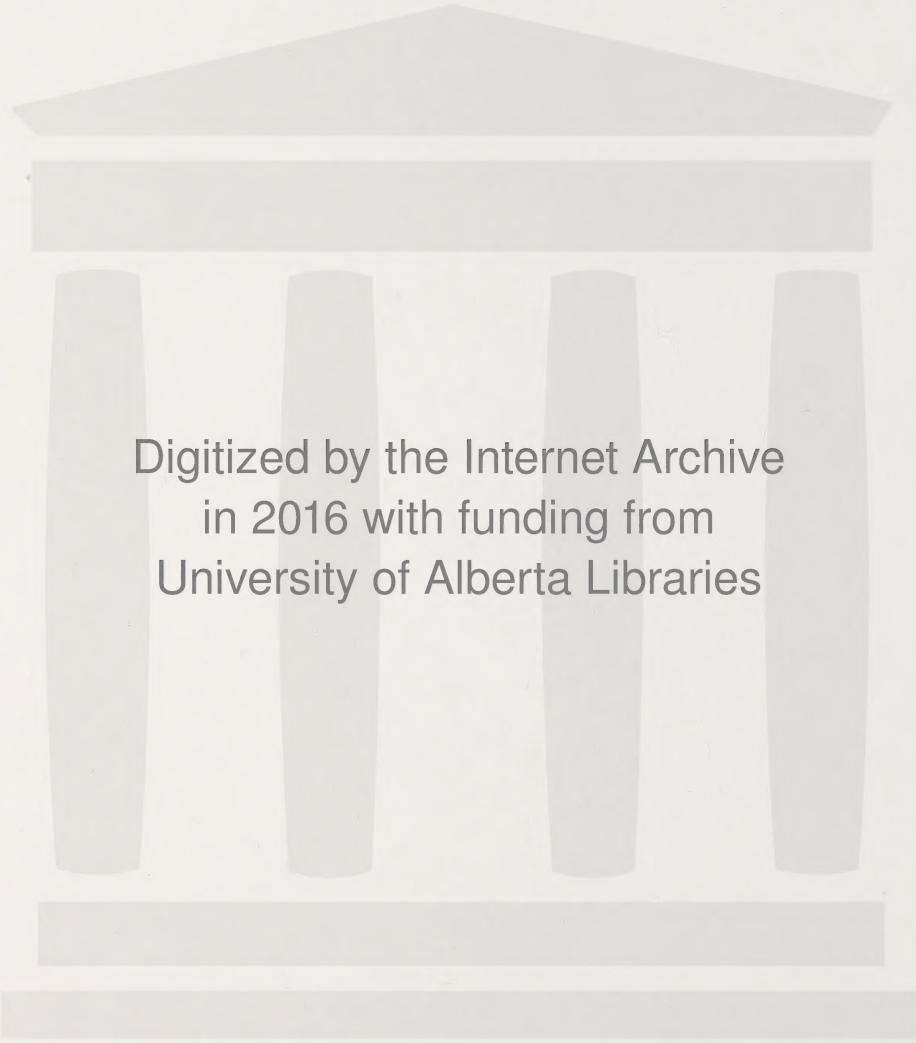
Mathematics



Module 6



**Distance
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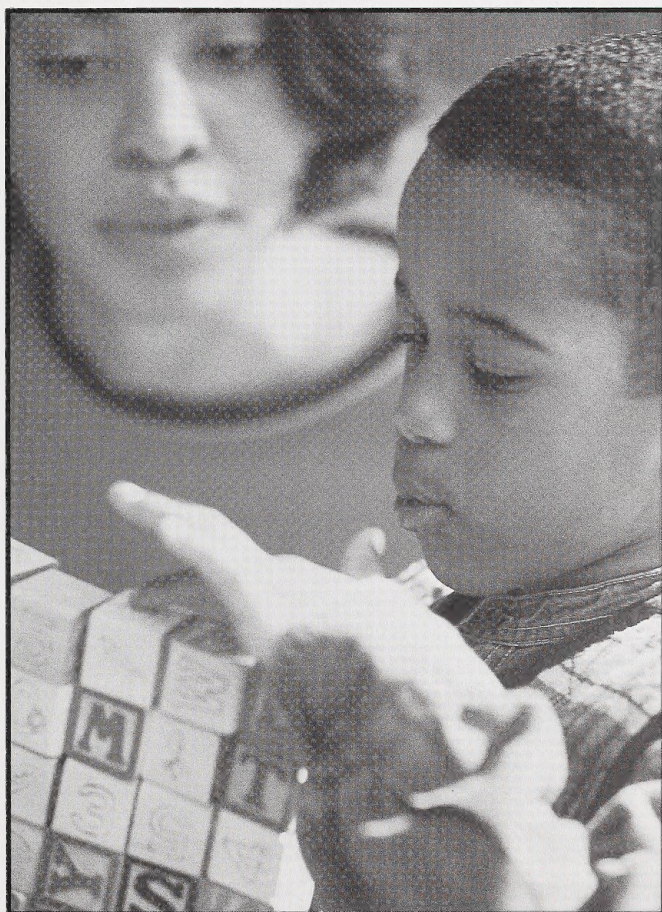


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Mathematics

Module 6



Distance
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This product is the result of a joint venture with the following contributors:



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Module 6
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This document is intended for

Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



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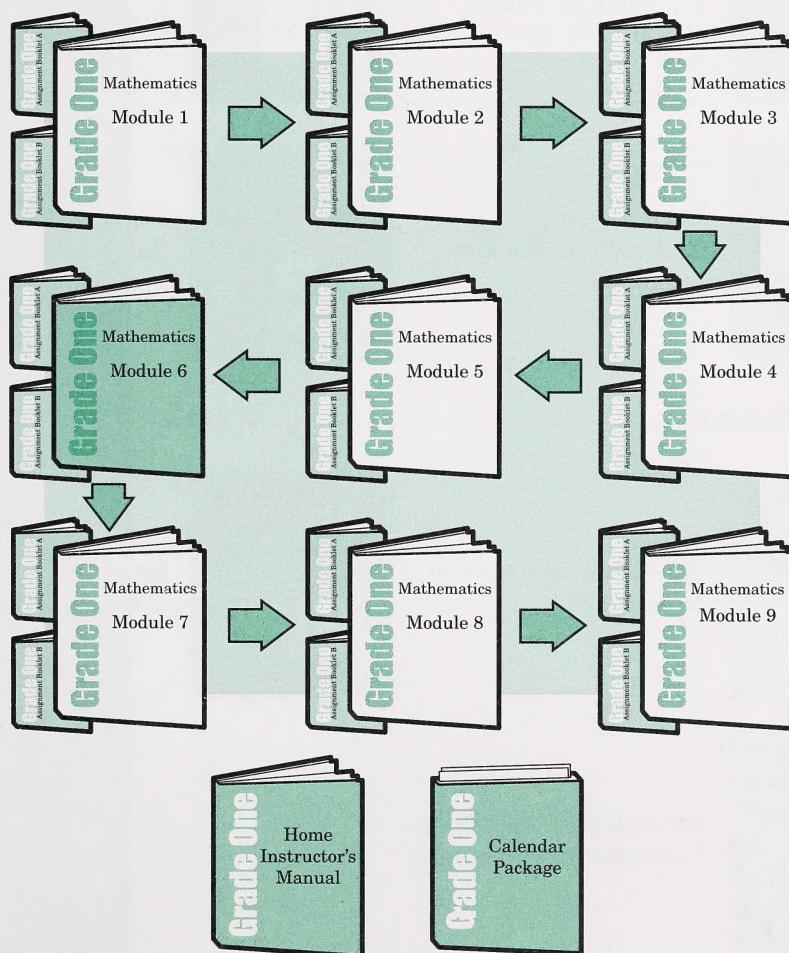
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Course Overview and Basic Components

Welcome to the Grade One Mathematics program.

The booklet you are presently reading is called a Student Module Booklet. It will take you through the course and show you, step by step, what to do with the student and how to do it. The activities you do will prepare the student for the assignments.

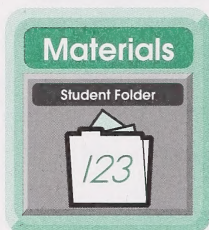
Grade One Mathematics contains nine modules. Each module has two Assignment Booklets. The module you are working on is highlighted in a darker colour. The two other basic course components—a Home Instructor's Manual and a Calendar Package—are also highlighted.



Visual Cues

Throughout the Grade One Mathematics program, you will find visual cues that indicate a material needed or an activity to carry out. Read the following explanations to discover what each icon prompts you to do.

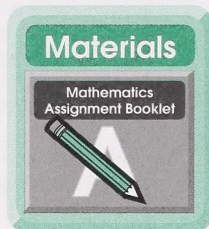
Icons: Materials



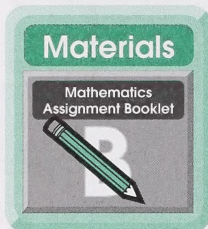
Place an item in the Student Folder.



Turn to the Home Instructor's Manual for further information.



Turn to the Assignment Booklet indicated.

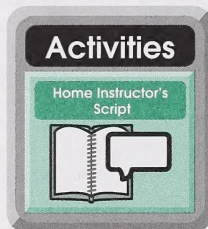


Turn to the Assignment Booklet indicated.

Icons: Activities



Read this information to yourself.

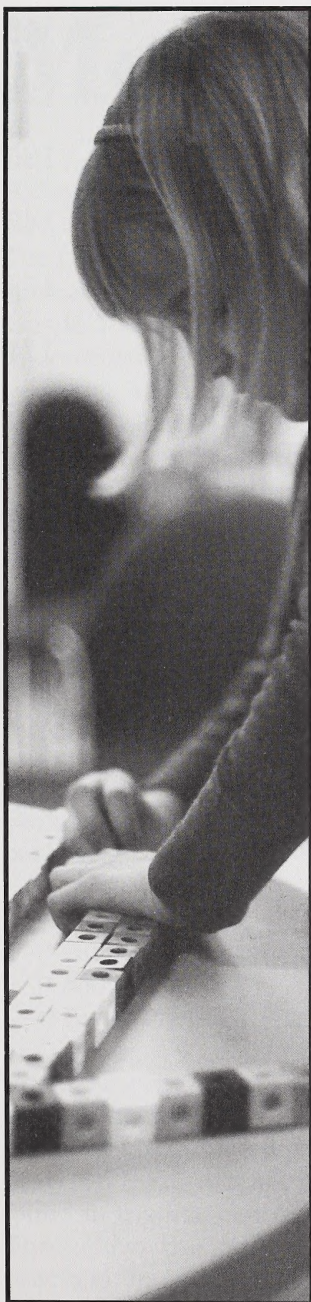


Read this information with the student.



Proceed with the daily Calendar Time activity.

Contents



Mathematics Module 6 Overview	1
Module Web Chart	2
Mathematics Module Submissions	3
Calendar Time	3
Additional Resources	4
Home Schooling: Teaching the Whole Child	6
Day 1	7
Day 2	19
Day 3	31
Day 4	41
Day 5	53
Day 6	61
Day 7	67
Day 8	75
Day 9	85

Day 10	97
Day 11	107
Day 12	115
Day 13	125
Day 14	135
Day 15	145
Day 16	155
Day 17	171
Day 18	187
Credits	193

Mathematics

Module 6 Overview

Welcome to Module 6 of Grade One Mathematics.

The student will begin this module by following recipe directions and applying the skills learned to sequence events. Next, the student will count orally by ones, twos, fives, and tens to 100. The development of these skills leads to estimating, counting, and comparing the number of objects in sets of 10 to 50 members and eventually to identifying place value in groups and pictures of objects. Adding and subtracting numbers to 18 is next, followed by the student recognizing and naming pennies, nickels, and dimes, stating the value of these coins, and creating equivalent sets.

This module will also develop your student's understanding of data management. Instruction is provided in the areas of collecting first-hand information by counting objects and conducting surveys, constructing concrete and picture graphs using one-to-one correspondence, and comparing data, using appropriate language.

Problem solving is an integral part of each stage of learning for the child and it continues to be an important component of this module.

Each day's lesson has four main elements. All four are important parts of the program.

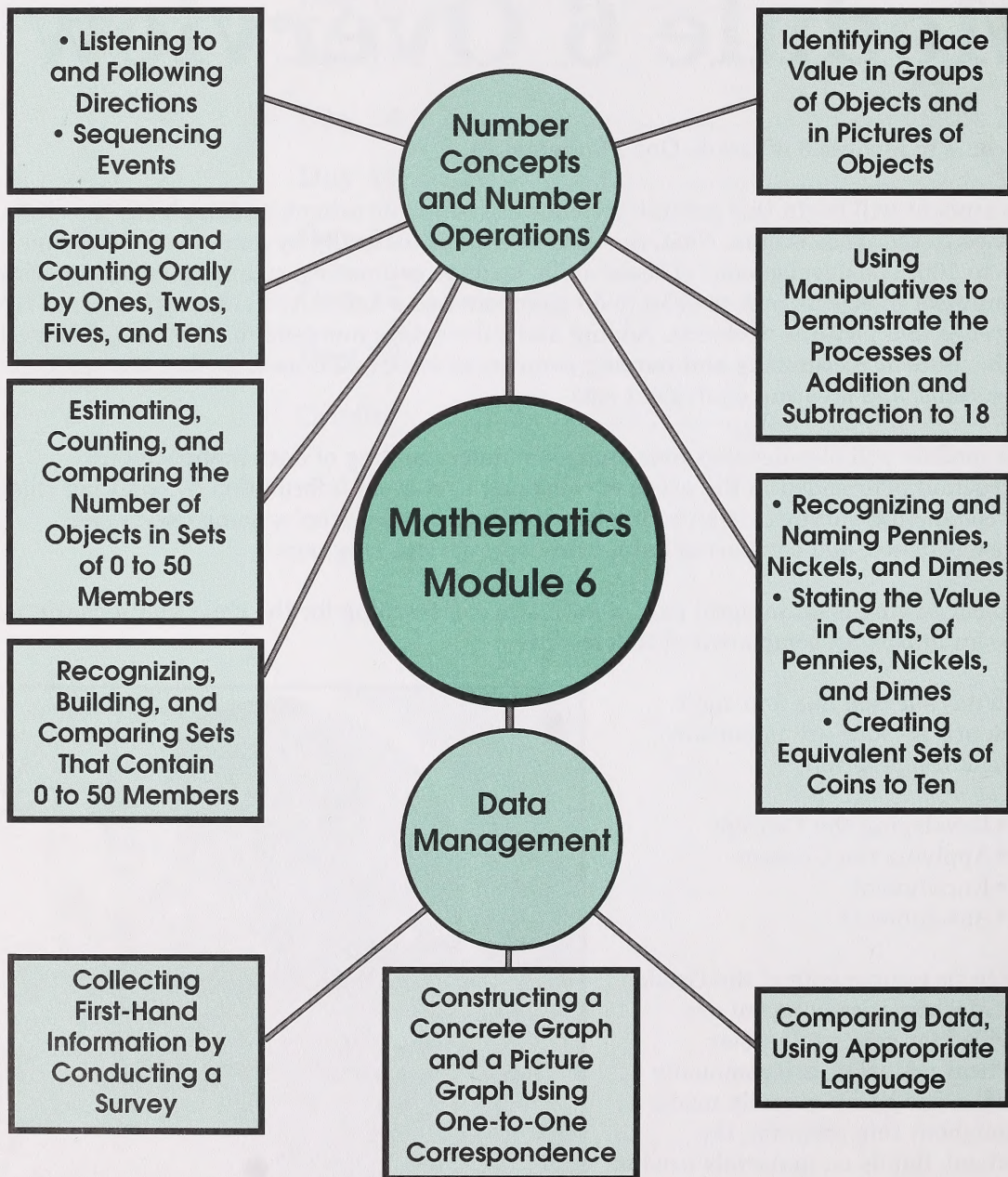
- Developing the Concept
- Applying the Concept
- Enrichment
- Assignments

The basic components of the Grade One Mathematics program are provided for you, while other practical materials are commonly found in the home or easily made. Throughout this program, the practical, hands-on materials used to teach the concepts are referred to as *manipulatives*.



Module Web Chart

This chart highlights the main mathematical topics for Module 6.



Mathematics Module Submissions

Materials

Student Folder



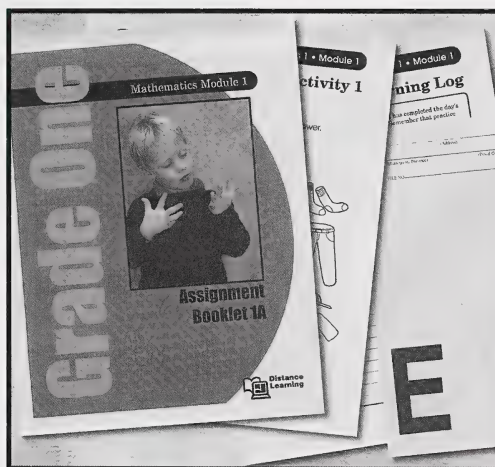
Place completed items in the Student Folder when you see this icon. On Day 9 and Day 18 of each module, you will find a checklist in the Assignment Booklet to help you compile items for submission to the child's teacher. The teacher will let you know when to provide these items for marking.

Materials

Home Instructor's Manual



Note: The Student Folder is not included with the basic course components. Refer to the Home Instructor's Manual for information on the Student Folder.



Calendar Time

Activities

Calendar Time



Many essential concepts are learned through the calendar activities that begin each lesson. If your student is not enrolled in the accompanying Grade One Thematic program, refer to the Calendar Package for information, activities, and resources.

Additional Resources

The basic mathematics resources that the student needs for this module are provided. You could extend these basic resources with additional ones from a public or school library. Listed below are concept-related books, songs, and rhymes that could enrich this module. A trip to the library in search of these resources may be a delightful beginning to your module. In addition, you could investigate the many games and computer programs on the market that may enhance your student's learning opportunities.

Number Concept Resources

- Anno, Mitsumasa. *Anno's Counting Book*. 1977.
Anno, Mitsumasa. *Anno's Counting House*. 1982.
Aylesworth, Jim and Young, Ruth. *One Crow: A Counting Rhyme*. 1988.
Beierle, Marlene and Sylvan, Anne. *What Comes in Threes?* 1995.
Berenstain, Stanley and Berenstain, Janice. *Bears on Wheels*. 1969.
Carter, David A. *How Many Bugs in a Box?* 1988.
Conover, Chris. *Six Little Ducks*. 1976.
Crews, Donald. *Ten Black Dots*. 1986.
Dee, Ruby. *Two Ways to Count to Ten*. 1988.
Ehlert, Lois. *Fish Eyes: A Book You Can Count on*. 1992.
Gerstein, Mordicai. *Roll Over*. 1988.
Giganti, P. *How Many Snails? A Counting Book*. 1988.
Handford, Martin. *Where's Waldo?* 1987.
Hawkins, Colin, and Hawkins, Jacqui. *How Many Are in This Old Car? A Counting Book*. 1988.
Hoban, Russel and Selig, Sylvie. *Ten What? A Mystery Counting Book*. 1975.
Hoban, Tana. *Count and See*. 1972.
Hoban, Tana. *More Than One*. 1981.
McMillan, Bruce. *Counting Wildflowers*. 1995.
Oppenheim, J. and Reid, B. *Have You Seen Birds?* 1986.
Parker, J. *I Love Spiders*. 1988.
Pluckrose, Henry. *Numbers*. 1988.
Robinson, Shari. *A First Number Book*. 1981.
Serfozo, M. *Who Said Red?* 1988.
Silverstein, Shel. *A Light in the Attic ("How Many, How Much")*. 1981.
Thomson, Ruth. *All About 1, 2, 3*. 1986.
Wahl, John and Wahl, Stacy. *I Can Count the Petals of a Flower*. 1976.
Vogel, Ilse-Margaret. *One Is No Fun But 20 Is Plenty!* 1972.

Graphing Resources

- Baylor, Byrd. *Guess Who My Favorite Person Is*. 1992.
Brown, Marcia. *Stone Soup, An Old Tale*. 1987.
Carle, Eric. *Rooster's Off to See the World*. 1991.
Cushman, Jean. *Do You Wanna Bet? Your Chance to Find Out About Probability*. 1991.
Diagram Group. *Comparisons*. 1980.
Gardner, Beau. *Can You Imagine: A Counting Book*. 1987.
Kellogg, Steven. *The Mysterious Tadpole*. 1993.
Munsch, Robert. *Something Good*. 1990.
Parker, Tom. *In One Day*. 1984.
Stinson, Kathy. *Red Is Best*. 1982.
Wildsmith, Brian. *Whose Shoes?* 1987.
Winthrop, Elizabeth. *Shoes*. 1986.
Ziefert, Harriet. *Where's the Halloween Treat?* 1985.

Money

Burns, Marilyn. *The \$1.00 Word Riddle Book*. 1997.

Silverstein, Shel. *Where the Sidewalk Ends*, "Smart." 2000.

Viorst, Judith. *Alexander, Who Used to be Rich Last Sunday*. 1978.

Number Concept Manipulatives





Social

Physical

Intellectual

Creative

Emotional

Home Schooling:
Teaching the Whole Child

Day 1



Calendar Time

Time recommended: 10 minutes

If your student is enrolled in the accompanying Grade One Thematic program, you will already have completed Day 1 Calendar Time before turning to this Mathematics Module 6 booklet. In that case, proceed directly with the remainder of the Math Time.

If your student is not enrolled in the accompanying Thematic program, then refer to the Calendar Package for further information before proceeding with today's lesson.

Focus for Today

Time recommended: 45 minutes

- developing listening skills
- following directions
- sequencing events



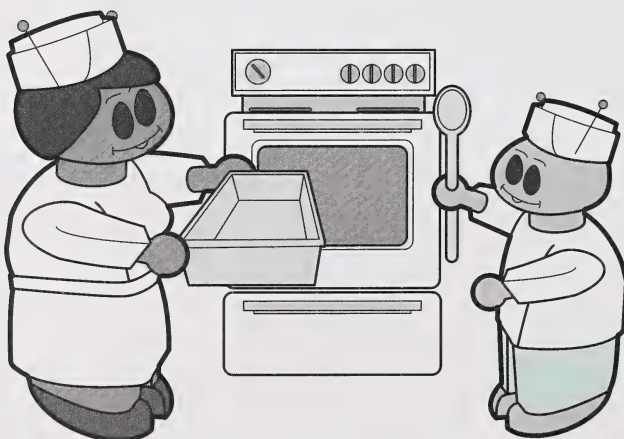
Vocabulary (spoken only)

Look for the following words throughout today's lesson. These words may be used in context and, if introduced to the student, are spoken only, so it is not necessary to review the list with the child. Students at this level are not required to read, spell, or write these words, with the exception of the number words from zero to ten.

cardinal	second
ordinal	third
nominal	fourth
first	fifth

Materials Required

- box of required materials from the master list
- ingredients and utensils to make hot cross buns or another recipe of your choice
- two identical sets of ten counters, with each object in the set a different colour—for example, blocks, plastic building blocks, or crayons (optional)
- large book or cardboard barrier (optional)
- ordinal word and number cards previously used in Module 3 (optional)



Developing the Concept

Activities

Teaching Tip



Three types of numbers are used in daily activities. They are

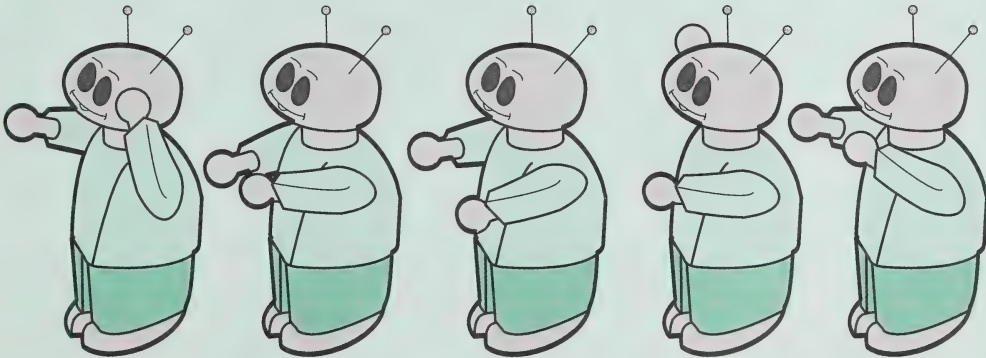
- **cardinal numbers**
- **ordinal numbers**
- **nominal numbers**

Cardinal numbers are used for the total number of objects in a group; for example, there are six cookies on the plate.

Nominal numbers are used to name or identify objects; for example, a street number or postal code.

Ordinal numbers are used to show placement in an ordered sequence; for example, he is **second** in line. The ordinal use of numbers to ten is what the student will be reviewing today.

Children begin to use ordinal numbers in everyday experiences before they reach school age. You will probably hear them use ordinal numbers, such as **first**, **second**, or **third**, when they are playing. Ordinal numbers are used only if the objects being counted are in order.



1st

2nd

3rd

4th

5th

first

second

third

fourth

fifth

Enlarge and post the following rhyme.

Hot Cross Buns

Hot cross buns!
Hot cross buns!
One a penny, two a penny,
Hot cross buns!

Read the rhyme together and point to each word with the top of your pencil as you read it.



What kind of buns did you read about in this rhyme? (hot cross buns)

What numbers did you read about in this rhyme? (one and two)

To make hot cross buns, you need baking ingredients and utensils.

What baking ingredients and utensils do you think you would need to make hot cross buns?



You could use the following recipe, or another recipe of your choice, to help you in your discussion.

Hot Cross Buns

Warm water	$\frac{1}{2}$ cup	125 mL
Granulated sugar	1 tsp.	5 mL
Envelope active dry yeast	1	1
Butter or margarine, softened	$\frac{1}{4}$ cup	50 mL
Granulated sugar	$\frac{1}{4}$ cup	50 mL
Egg, room temperature	1	1
Salt	$\frac{3}{4}$ tsp.	4 mL
Cinnamon	$\frac{1}{2}$ tsp.	2 mL
Warm milk	$\frac{3}{4}$ cup	175 mL
All-purpose flour	1 cup	250 mL
Currants	$\frac{1}{2}$ cup	125 mL
Finely chopped, cut candied peel (optional)	2 tbsp.	30 mL
All-purpose flour	$2\frac{1}{4}$ cups	550 mL

Stir water and sugar together to dissolve. Sprinkle yeast over water. Stir. Let stand 10 minutes. Stir.

Cream butter and sugar together. Beat in egg until fluffy. Mix in salt, cinnamon, and milk. Beat in first amount of flour. Mix in yeast mixture.

Mix in currants and peel. Add remaining flour. Mix well, adding a bit more, if necessary, to make a soft dough. Let dough rest 10 minutes; then knead until smooth and elastic. Place in greased bowl turning to bring greased part to top of bowl. Cover. Let rise in a warm place to double in size, about 1 hour.

Punch dough down. Shape into about 18 balls. Place on greased baking sheet or 2 pans 8 x 8 inch (20 x 20 cm) allowing room for expansion. Cut a deep cross in each bun with lightly greased scissors or sharp knife. Cover and let rise until almost double in size or until light. Bake in 400°F (200°C) oven for about 20 minutes. Brush with butter and cool on rack. Ice crosses when cool. Makes about 18 buns.

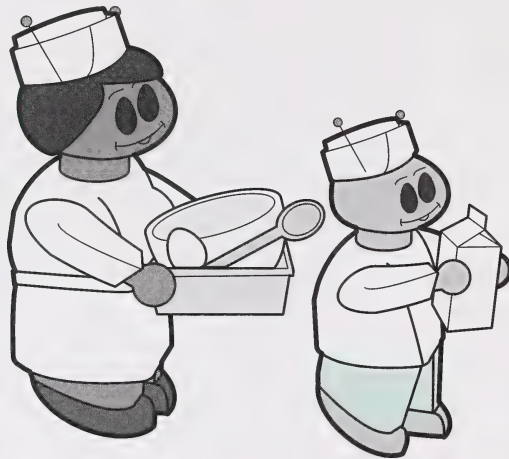
GLAZE

Icing (confectioner's) sugar	$\frac{1}{2}$ cup	125 mL
Water	$1\frac{1}{2}$ tsp.	8 mL
Vanilla	$\frac{1}{4}$ tsp.	1 mL

Mix all together adding a few more drops of water, if needed, to make a barely pourable glaze. Pipe or drizzle into crosses.¹

¹ Jean Paré, *Company's Coming: Holiday Entertaining* (Company's Coming Publishing Limited, 1987), 55. Reprinted by permission.

Ask the student to help you gather the required baking goods and utensils needed to make hot cross buns.

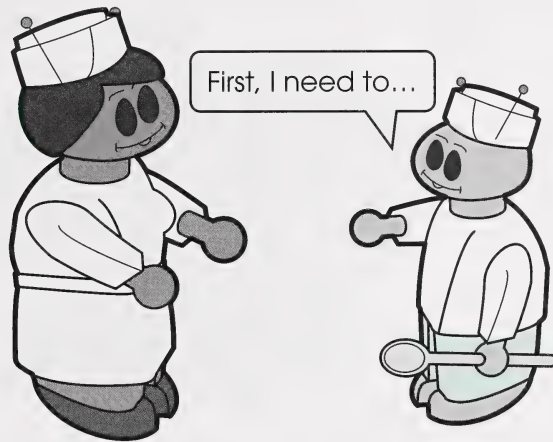


Applying the Concept

Make the hot cross buns with the student.



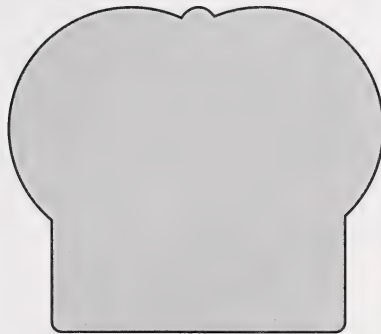
While making the buns, discuss what you need to do first, second, third, and so on.



While the hot cross buns are baking, have your student make a **How I Made Hot Cross Buns** booklet.

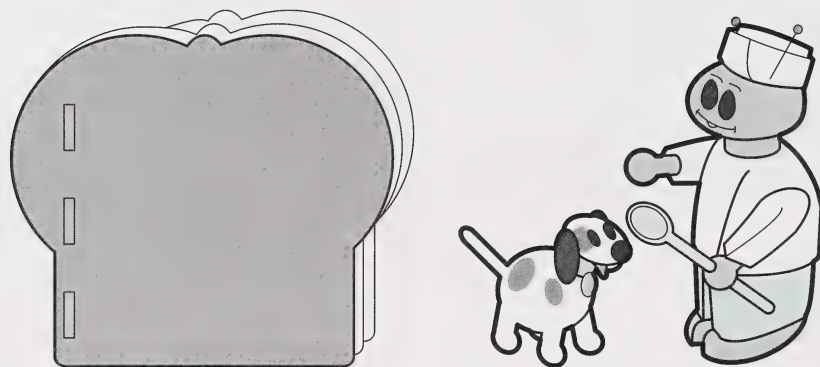
How I Made Hot Cross Buns Booklet

Step 1: On manila paper, draw and cut out the shape of a chef's hat.

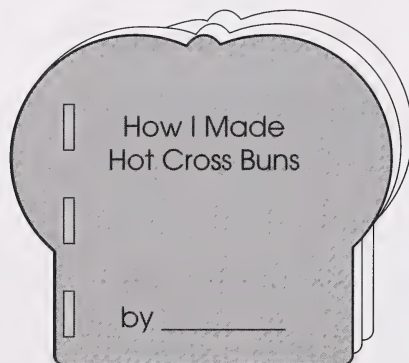


Use this shape as a tracer to make identical shapes on the two pieces of construction paper and on five sheets of blank loose-leaf paper. Cut out the shapes on each piece of paper.

Step 2: Between the covers made from construction paper, place the matching loose-leaf shapes. Staple the pages together on the left side.



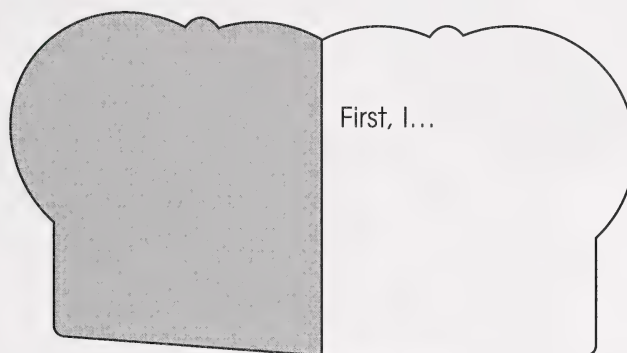
Step 3: On the front cover of the booklet, help the student print the title **How I Made Hot Cross Buns**, the word **by** underneath the title, and then the student's full name.



Step 4: From the beginning to the end of your baking, list five important tasks that you and the student performed. For example, your list could be similar to the following:

- First, I put . . .
- Second, . . .
- Third, . . .
- Fourth, . . .
- Fifth, I turned the oven on to 200°C, and then I placed my hot cross buns in the oven.

Step 5: On the ten inside pages of the booklet, help your student write about and illustrate the ten chosen tasks involved in making the hot cross buns. You may use the previous example as a guide.

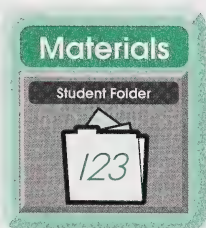


Step 6: Ask the student to print the abbreviated form of the module and day number (M6D1) on the back of the booklet.



Step 7: Encourage your student to read the booklet to family and friends.

When the booklet is not being shared with others, keep it in the Student Folder.



Enrichment (optional)

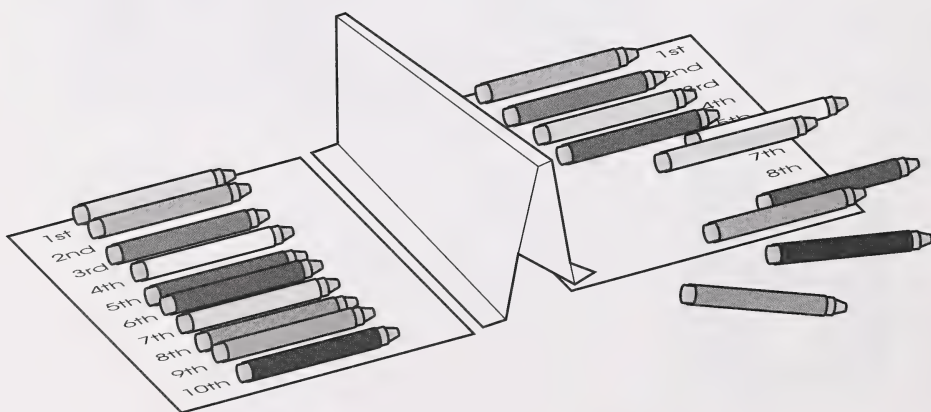
Enrichment activities are always optional. If you think at this point that the student needs extra help or a challenge, you may postpone the final assignment and Learning Log until after one or more of these activities.

Note: Use of these optional activities may require you to pace the student's progress in the rest of the module in order to accommodate special needs. For example, you may delay the final assignment until the student is ready for it. In that case, review the work before your student does the assignment.

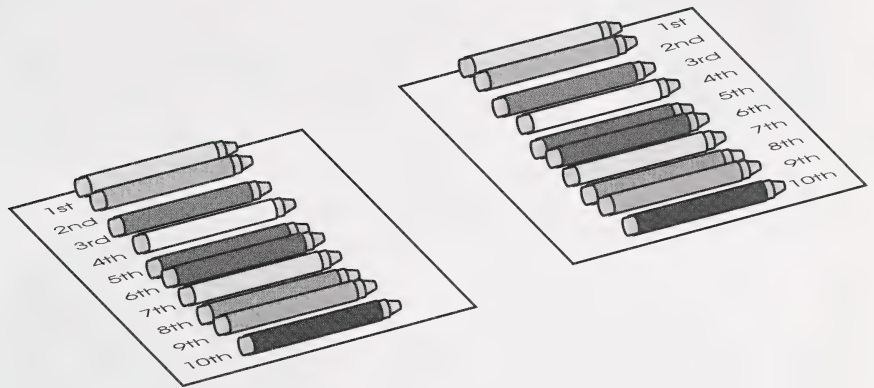
1. Where Does It Belong?

Step 1: Set up a barrier between yourself and the student using a large book or a piece of cardboard. Each of you keeps one set of ten identical objects and a sheet of paper with the numbers **1st** to **10th** printed on it.

Step 2: On your side of the barrier, arrange your ten objects in a row. Then using ordinal numbers, instruct your student to place a set of identical objects in the same way. For example, tell the student that the red crayon is first, the blue crayon is second, and so on.



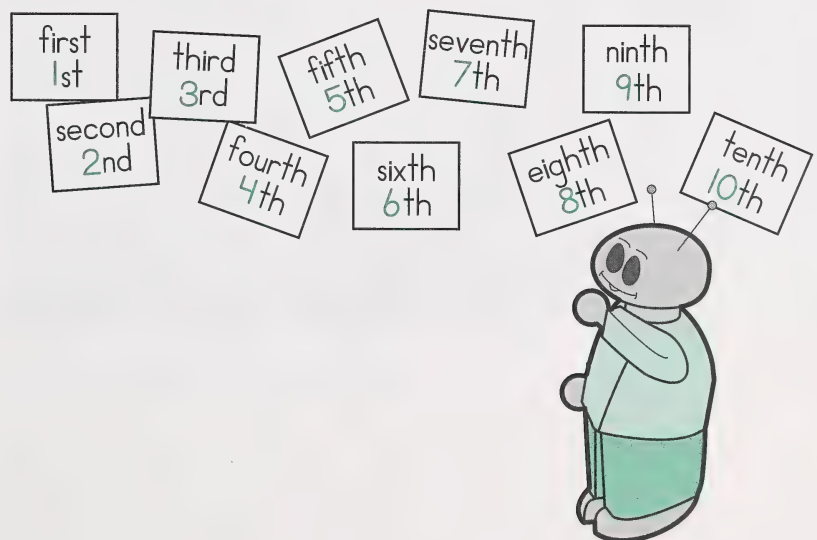
Step 3: Once you have given the position of the ten objects, lift the barrier to check if your rows of objects are identical.



Step 4: Take turns providing ordinal-position instructions and following them until your student has had the opportunity to practise using ordinal numbers.

2. Ordinal Scramble

Review with your student that the ordinal numbers mean the same as the ordinal words. (For example, the word **first** means the same as **1st**.) Mix up the ordinal number and word cards, and then ask the child to put them in order.



Materials

Mathematics
Assignment Booklet



Complete Day 1: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning. For example, was it easy or hard to count using ordinal numbers? Why was it easy or hard?



Day 2



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- counting and grouping items by twos, fives, and tens
- solving problems using t-tables and manipulatives

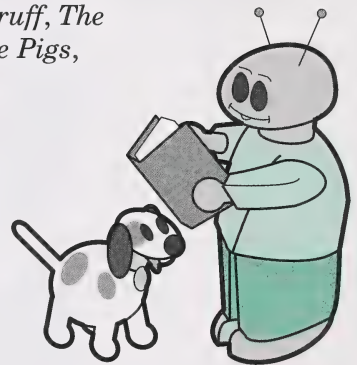


Vocabulary (spoken only)

twos
threes
fives
tens

Materials Required

- box of required materials from the master list
- 100 counters
- calculator
- the book *What Comes in Threes?* by Marlene Beierle and Anne Sylvan (optional)
- fairy tales: *The Three Billy Goats Gruff*, *The Three Little Kittens*, *The Three Little Pigs*, and *Goldilocks and the Three Bears* (optional)



Developing the Concept

Begin to talk about and list things that come in **twos**, **fives**, and **tens**.

For example, eyes, ears, hands, legs, feet, socks, mittens, shoes, and so on, come in pairs.

Twos

eyes socks
ears mittens
hands shoes
legs
feet

Fives

five fingers on
one hand

five toes on
one foot

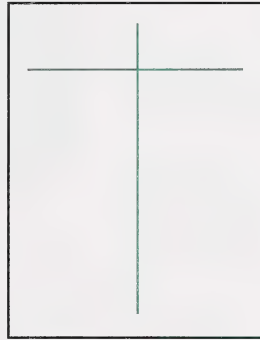
Tens

ten fingers on
two hands

ten toes on
two feet

Applying the Concept

On three blank sheets of loose-leaf paper, create three t-tables similar to the one shown below. Place one t-table in front of the student.



Review with the student how many eyes he or she has.

Then continue with the following discussion.



You are 1 person and you have 2 eyes.

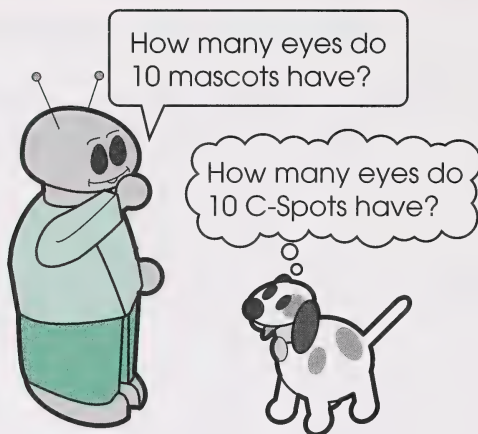
How many eyes do you think 10 people have?

(Encourage your student to estimate.)

Record your estimate on this piece of paper.



(Help the child as necessary.)

With one of the t-tables and this set of counters, we are going to solve the problem of how many eyes 10 people have. (Be sure that you have at least 20 counters. Record the numbers for each grouping on the t-table.)



At the top left side of the t-table, I will print the title **Number of People**; and on the top right side of the table, I will print the title **Number of Eyes**.

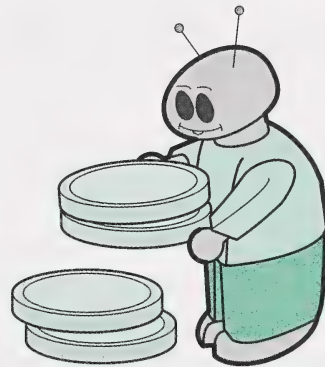
Add an illustration to help the student identify the correct column.

Number of People 	Number of Eyes 
1	2

You have already told me that you have two eyes, so under the appropriate heading I will show that 1 person has 2 eyes.

Have the student set aside two counters for each person that is marked down.

Number of People	Number of Eyes
1	2
2	4
3	6
4	8
5	10
6	12
7	14

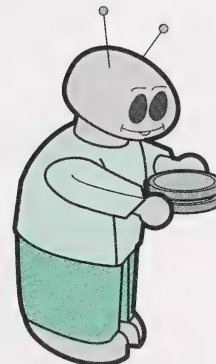


Continue to fill in the chart until the student has solved the problem of how many eyes ten people have.

Once the t-table is complete, have your student count by twos the counters that have been set aside.

The right side of the t-table may be used to help your student count by twos.

Number of People	Number of Eyes
1	2
2	4
3	6
4	8
5	10
6	12
7	14



Compare the student's estimate to the answer. For example, how much greater than or less than the answer is the estimate?

Now, ask the student how many fingers are on one hand. Remember to include the thumb.



If for some reason the student has less or more than five fingers, adapt the next two activities by having the student count another set of five or ten, such as toes or counters.

Next, have your student estimate how many fingers ten people would have on one hand in total. Record the estimate.

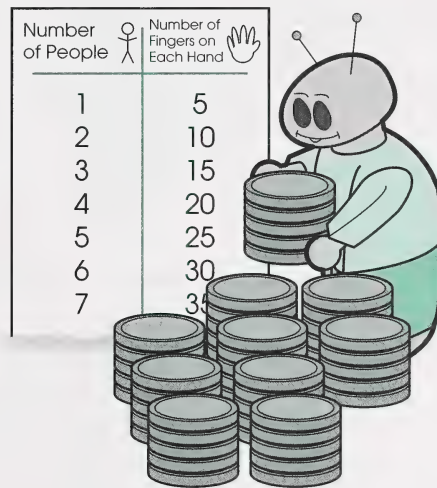
Ask the student to use the same counters and a second t-table to find the answer.

Number of People	Number of Fingers on Each Hand
1	5
2	10

Continue to fill in the chart until the student has solved the problem of how many fingers ten people would have on one hand in total.

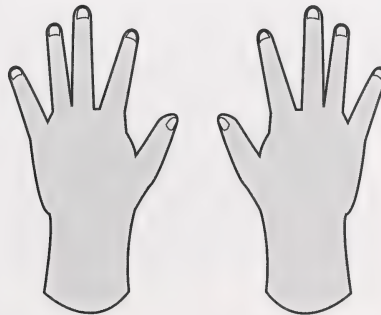
Once the t-table is complete, have your student count by fives the counters that have been set aside.

The student can use the right side of the t-table to help count by fives.

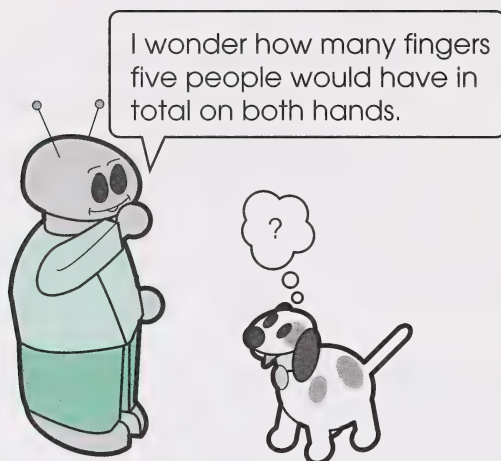


Compare the estimate to the answer.

Then ask the student what the total number of fingers and thumbs is on two hands.



Next, have your student estimate how many fingers five people would have on both hands. Record the estimate.



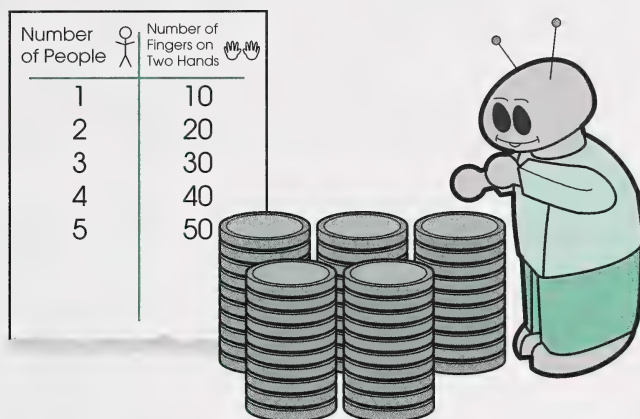
Use the same counters and a second t-table to figure out the answer.

Number of People	Number of Fingers on Two Hands
1	10
2	20
3	30
4	40
5	50

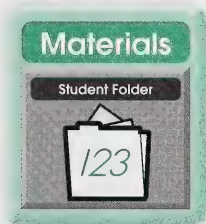
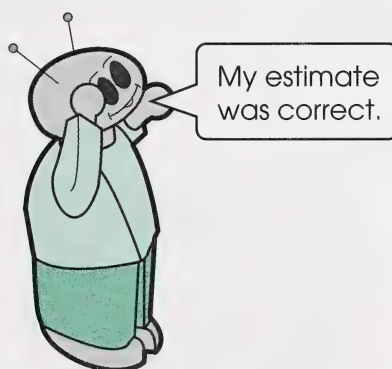
Continue to fill in the chart until the student has solved the problem of how many fingers five people would have on both hands in total.

Once the t-table is complete, have your student count by tens the counters that have been set aside.

The student can use the right side of the t-table to help count by tens.



Compare the estimate to the answer.



Staple these t-tables together, and have the student print his or her full name and M6D2 on the back of the last page. Then place the t-tables in the Student Folder.

The student will use these t-tables again for activities in other days. Display the twos, fives, and tens t-tables at the student's eye level for these activities.

Calculator Time

Challenge your student to discover the keys that must be pressed on a calculator to make it skip count by twos to 100.

If necessary, help the student to see that by pressing $0 + 2, =, =, =,$ you can skip count by twos.

Then have the student count aloud as each number appears on the display.

Do the same for skip counting by fives and tens to 100.

Then discuss the following questions with your student.

Is it faster to count to 100 by 2s, 5s, or 10s?

Why do you think that?

How could you check? (If necessary, suggest that the student time how long it takes to count to 100. Help the child to complete the actual timing.)



Enrichment (optional)

1. What Comes in Twos, Fives, or Tens? Booklet

Help the student make a booklet about twos, fives, or tens.

The booklet could look similar to the one shown below.



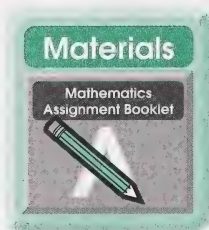
2. Counting by Threes

For an added challenge, have the student talk about things that come in **threes**.



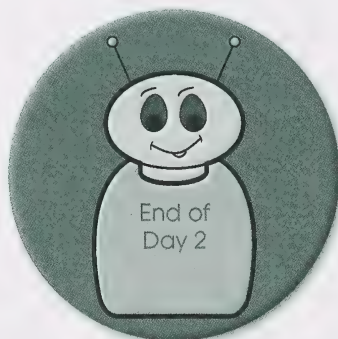
If possible, obtain from your local library the book *What Comes in Threes?* by Marlene Beierle and Anne Sylvan.

Other resources about the number three that you might enjoy talking about and reading to your student are the fairy tales *The Three Billy Goats Gruff*, *The Three Little Kittens*, *The Three Little Pigs*, and *Goldilocks and the Three Bears*.



Turn to Mathematics Assignment Booklet 6A, and follow the directions to do the assignment for Day 2.

Then complete Day 2: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about today's mathematics learning. For example, was it easy or hard to skip count? Why was it easy or hard?



Day 3



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- grouping and counting by ones, twos, fives, and tens to 100



Vocabulary (spoken only)

greater than
less than



Materials Required

- box of required materials from the master list
- 100 counters
- adding-machine tape or another suitable substitute
- calculator



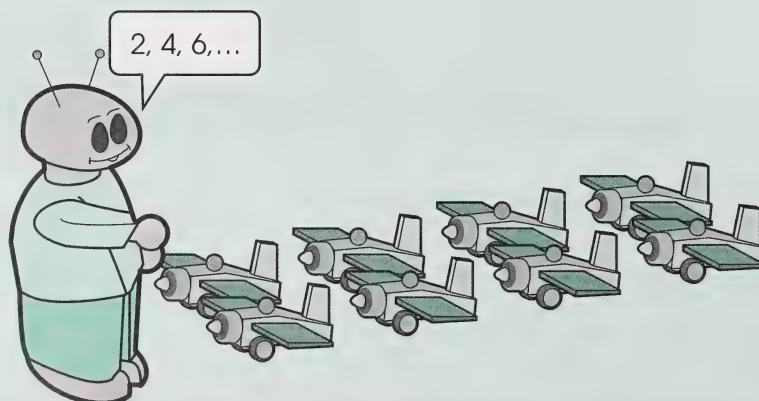
Developing the Concept

In today's lesson, the student will review counting by ones and skip counting by twos, fives, and tens.



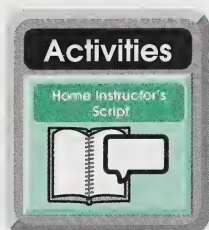
In skip counting, your student gives correct names, but instead of counting by ones, counts by twos, fives, tens, or other values.

In addition to demonstrating many patterns, skip counting provides eventual readiness for multiplication and division. Skip counting, in conjunction with counting forward and counting backward, will also prepare your student for counting money.



Place 50 counters in front of your student.

Then proceed with the following script.



Estimate how many counters there are.

I will record your estimate on a piece of paper.

Now, let's count by 1s to see how close your estimate is to the actual amount.

Help the student as necessary to count the objects, and then record the actual amount.

Next, continue with the following script.

Was your estimate **greater than** or **less than** the actual count?

How much **greater than** or **less than** was it? (Help the student use the counters to count either forward or backward to show how close the estimate was to the actual count.)

To find the actual count, I asked you to count by 1s.

Could you find the actual amount by counting by 2s, 5s, or 10s? (Yes)

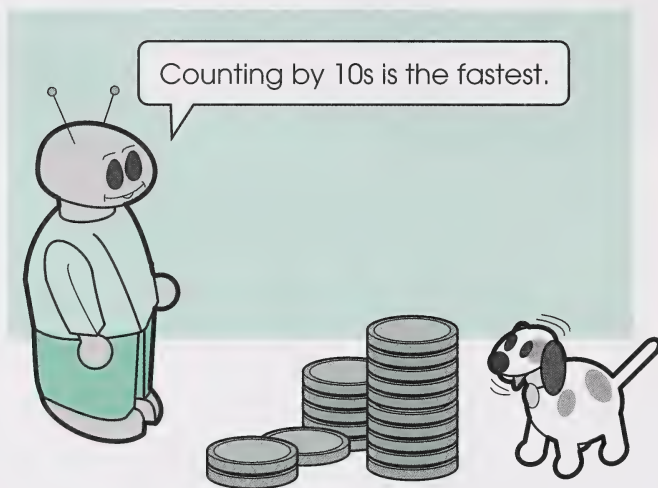
How would you like to count the objects—by 2s, 5s, or 10s?

Give the student the opportunity to count the 50 objects in the chosen way and then count them in the remaining ways.

Monitor your student's counting, and discuss and correct any errors.

Once the student has had the opportunity to count by ones, twos, fives, and tens, ask the following questions:

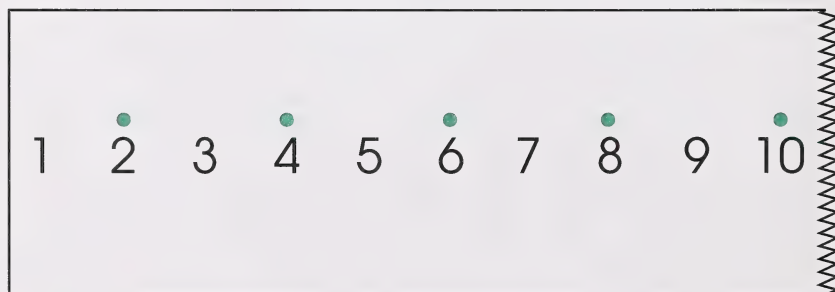
- Which way of counting is the fastest?
- Which way of counting did you like the best?



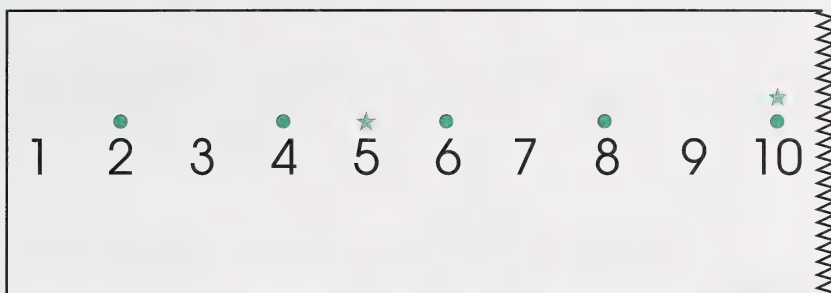
Applying the Concept

On adding-machine tape or another suitable substitute, print the numbers from one to one hundred.

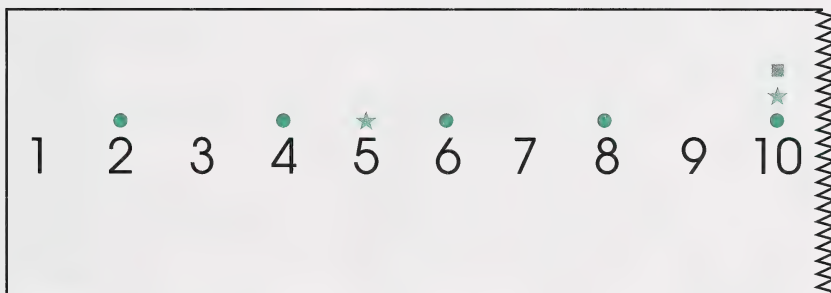
Now, count aloud by twos and place or draw a coloured dot or other symbol above each number that you say.



Next, count by fives and place or draw a different coloured dot or other symbol, such as a star, above each number that you say.



Follow a similar procedure with the tens.



Once completed, display this number line in the student's work area. Along with the t-tables, the number line will help your student in skip counting.

In front of the student, place a set of 50 counters. Continue with the following script.

How many counters do you think there are?

Print your estimate on this sheet of paper. (Help the student as necessary.)

Count the set of objects by 1s, 2s, 5s, or 10s to find out how many counters there are.

(Whenever necessary, help the student in the counting process.)

Choose another way to count the number of objects. (Continue to help the student in the counting process whenever necessary.)

Is the total amount the same? (Yes)

Now, count the objects by 2s to 28. (Monitor the student's counting.)

Count the counters by 5s to 30.

Gather 100 counters together and count them by 10s to 100.

Place 37 counters in front of the student.

In front of you, I have counted out 37 counters.

Starting from 37, finish counting a set of 50 for me.

Using dialogue similar to what you have already been using, take turns challenging each other to count by ones, twos, fives, and tens.

Continue until the student has had the opportunity to practise counting to 100 in different ways or until the child gets tired.

Calculator Time

Review how to use a calculator to count by twos, fives, and tens.

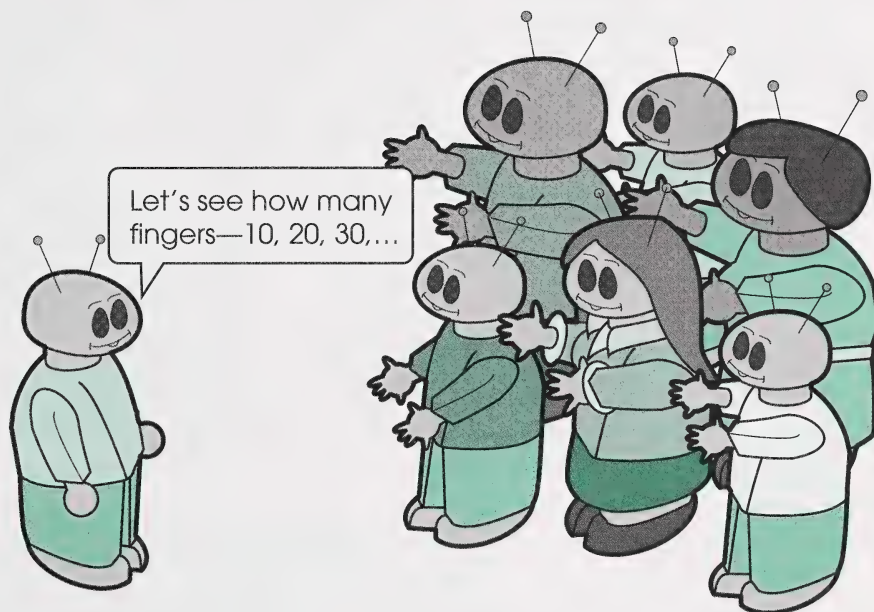
As each number appears on the display, count it aloud.

Then experiment with counting by twos, fives, and tens using different starting numbers. Help your student as necessary.

Enrichment (optional)



1. A Counting Get-Together

Ask several family members and friends to stand together and hold up their hands as shown in the following illustration.



Challenge your student to count by tens to find out how many fingers these people are holding up in total.

Use a t-table to record the amounts.

	
1	10
2	20
3	30
4	40
5	50
6	60

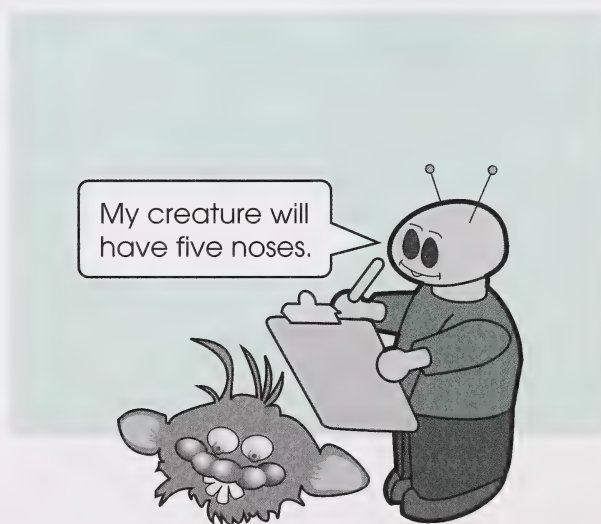
Once the first problem has been solved, decide as a group what the next displayed number will be and whether it can be shown in twos, fives, tens, or a combination of one of the groupings. For example, if the chosen number is 24 and the groupings are by twos, six people would hold up two fingers on each hand, or two people could hold up ten fingers on each hand, and one person could hold up two fingers on each hand.

Take turns calculating the group's number on a t-table. Help as necessary.

Continue this activity until the student has had an opportunity to practise skip counting (repeated addition) or until the child gets tired.

2. Creature Patterns

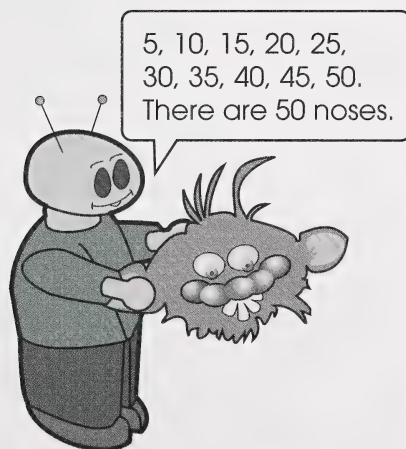
Have your student choose a number (for example, five) and a body part (for example, nose). Encourage the student to choose a number that can be skip counted, such as one, two, five, or ten. Then have the student draw a creature that has the chosen characteristic (for example, five noses).



Ask your student to draw up to ten more creatures with the same characteristic.

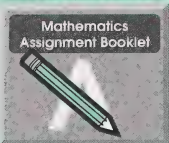


Then have the student use skip counting (repeated addition) to count how many of the chosen characteristics there are in total.



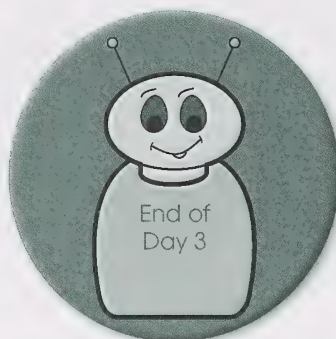
Continue this activity until the student has had an opportunity to practise skip counting or until signs of fatigue begin to appear.

Materials



Turn to Mathematics Assignment Booklet 6A, and follow the directions to do the assignment for Day 3.

Then complete Day 3: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about today's mathematics learning. For example, how is the skip counting coming along? Is it harder to skip count by some numbers than others?



Day 4



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- estimating and counting the number of objects in a set of 0 to 50 objects
- comparing the estimate with the actual number
- recognizing and building sets that contain 0 to 50 members
- identifying place value in concrete and pictorial representations



Vocabulary (spoken only)

place value

Materials Required

- box of required materials from the master list
- 59 counters
- five transparent plastic bags

Tens	Ones

- water-soluble pen
- a container of water and a rag for removing numbers from the place-value mat
- calculator
- the 1 to 10 number cards (optional)
- die (optional)
- plastic interlocking cubes as counters or other suitable counters (optional)
- stamps and stamp pad or stickers (optional)

Developing the Concept

In today's lesson and in subsequent lessons, your student will be working with **place value**.

Activities

Teaching Tip



The number system that your student will be working with has four very important attributes.

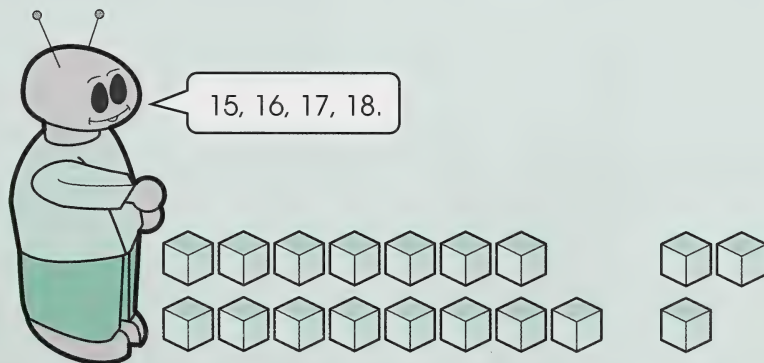
The first attribute is **place value**. The position of a digit represents its value. For example, the 3 in 34 means "thirty" or "three tens" and has a different meaning from the 3 in 43, which names "three ones."

The second attribute is a **base of ten**. The term **base** simply means a collection. Thus, the system your student will be working with has ten digits, 0 through 9.

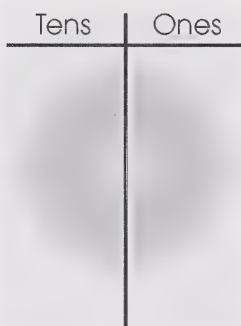
The **use of zero** is the third attribute. The use of zero allows you to represent the absence of something. For example, the number 30 shows that there are no ones in a number containing three tens.

The fourth attribute is the **additive property**. Numbers are added together according to their place value. For example, when the number 3 is added to the number 15 ($15 + 3$), the numbers in the ones position are added first, the numbers in the tens position second, and so on.

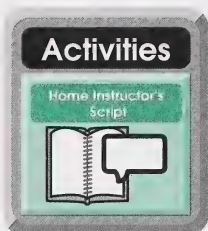
These attributes make the number system efficient and your student's knowledge of them will aid in the understanding of how numbers work.



Using sturdy paper, make a mat like the one shown below. Because your student will be using this mat a great deal, placing clear self-adhesive vinyl over the front of the mat will make it more durable.



In front of your student, set out 50 counters. Then say the following.



Estimate how many counters you think are in front of you. (If necessary, review with the student what the word **estimate** means.)

I will print your estimate on this piece of paper.

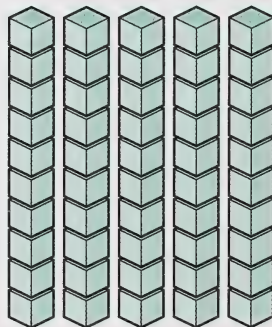
Now, let's check to see how close your estimate was to the actual amount.

Place your counters into groups of 10.

Once all the counters have been grouped, help the student count and label each group by tens.



10, 20, 30, 40, 50.

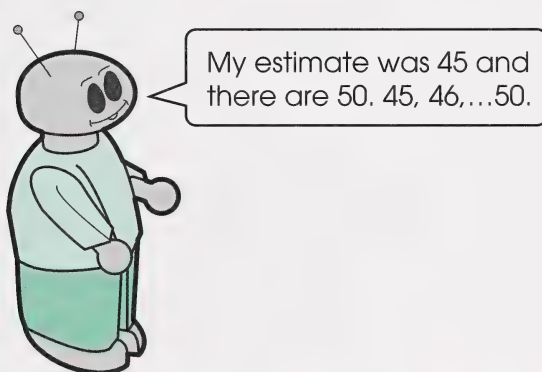


Then continue with the following script.

How many counters do you have in total? (Help the student as necessary.)

Was your estimate greater than or less than the actual count?

How much greater than or less than was it? (Help the student use the counters and count forward or backward, depending on the situation, to show how close the estimate was to the actual amount.)



Applying the Concept

Activities

Teaching Tip



In this activity and in similar activities that follow, check to see whether your student accepts the grouping of tens, and counts by tens rather than trying to count by ones.

If your student still prefers to count only by ones, continue manipulative work with grouping and counting tasks. For example, when representing the number 18, your student is to develop an understanding of **many-to-one correspondence**.

Ten buttons in a bag makes one ten. The student must **count forward** by ones from ten until the number 18 is reached.

Working with groupings of tens and ones is an essential prerequisite to place-value understanding.

Ask your student to place the groups of ten counters into transparent bags. Place nine counters beside you.

Once the student has completed the task, ask the following questions.

How many bags of 10 do you have? (5)

How many counters are not in bags? (9)

Are there enough counters to make another set of 10? (No)

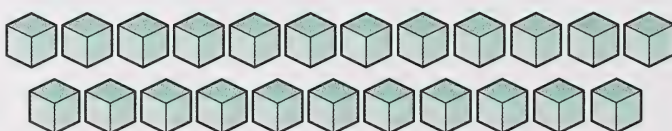
How many counters would you need to make another set of 10? (1)

Take out the place-value mat and the water-soluble pen.

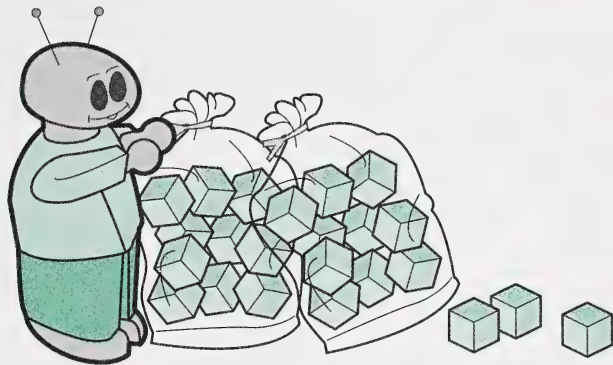
Under the tens column of the mat, print the number 2; and under the ones column, print the number 3.

Tens	Ones
2	3

Discuss with your student that one way to show the number 23 is to show the number 2 in the tens column and the number 3 in the ones column.

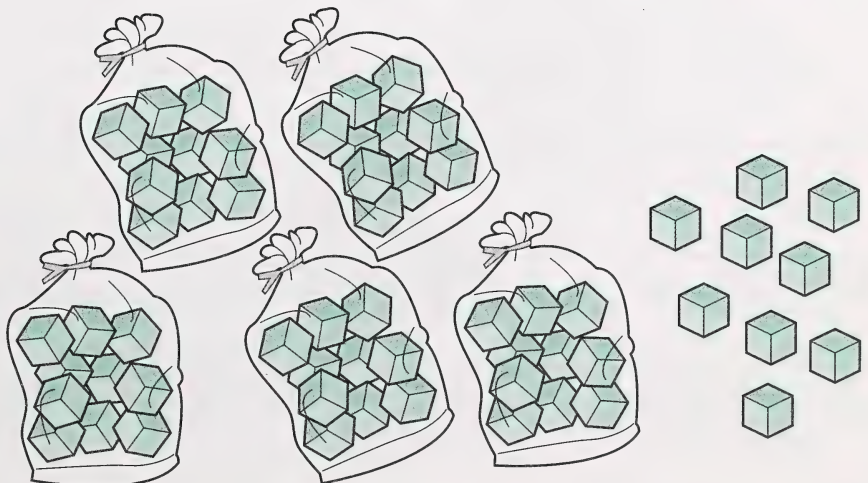


Now, help the student use the bags of ten counters and leftover ones to represent the number 23.



Continue to print other numbers from 1 to 50 and have the student represent the numbers using the bags of ten and the extra ones.

Tens	Ones
4	3



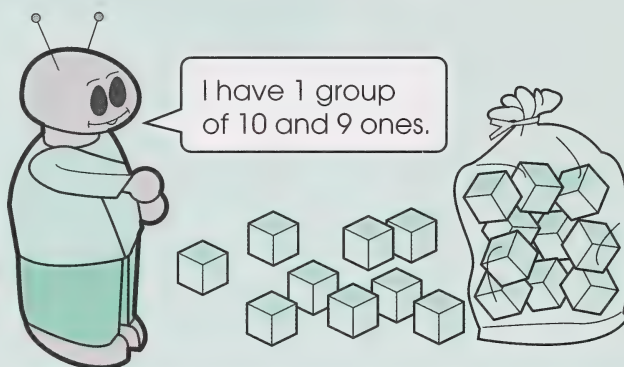
Activities

Teaching Tip

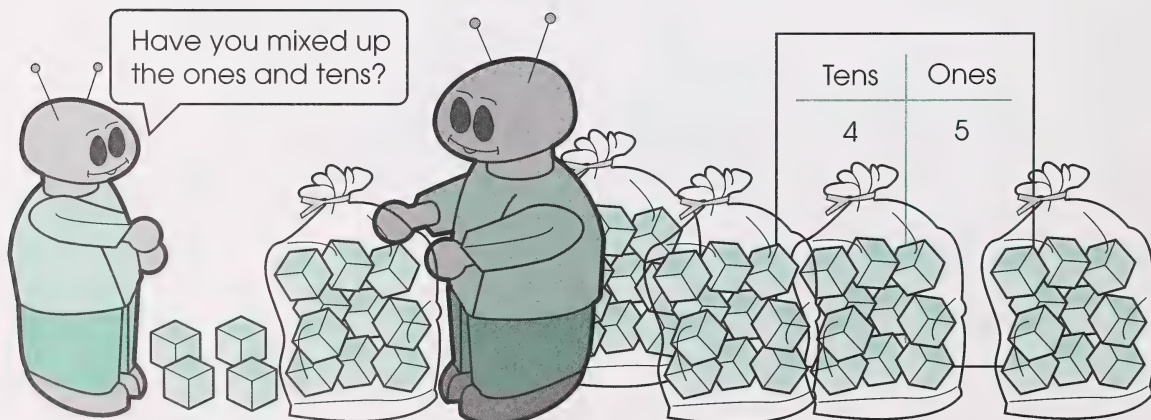


When developing place value and establishing number names, it is helpful for the student to initially skip beyond the numbers 11 through 19 and start with higher numbers. These teen numbers do not follow the same pattern of number names that the other numbers do. For example, the numbers 20, 21, 22, . . . and 30, 31, 32, . . . follow a pattern.

When your student demonstrates a good understanding of number names and place value from 20 to 50, then begin working on the numbers from 11 to 19.



When your student has had enough opportunity to represent the numbers from 1 to 50 in groups of tens and ones, take turns. When it is your turn, make an occasional mistake so that your student will have the opportunity to observe and help you correct the mistake.



Continue until the student has had the opportunity to practise or until he or she gets tired.

Calculator Time

Take out a calculator and proceed with the following instructions.

Find 0 on the calculator keys.

Press 0.

Do you see the 0 on the display?

Press clear.

Find the number 1 and key it in.

Do you see the number 1 on the display?

Press clear.



Continue to key in numbers in order from 0 to 30. Monitor to see that the student checks the display each time to make sure the number was keyed in correctly.

Enrichment (optional)

1. Ten in a Row

For this activity, your student will need ten strips of heavier weight paper, a stamp pad, and stamps or 50 or more stickers.

Step 1: Cut ten strips of heavier weight paper. Make six groups of ten by using a stamp or pasting stickers onto the strips of paper.



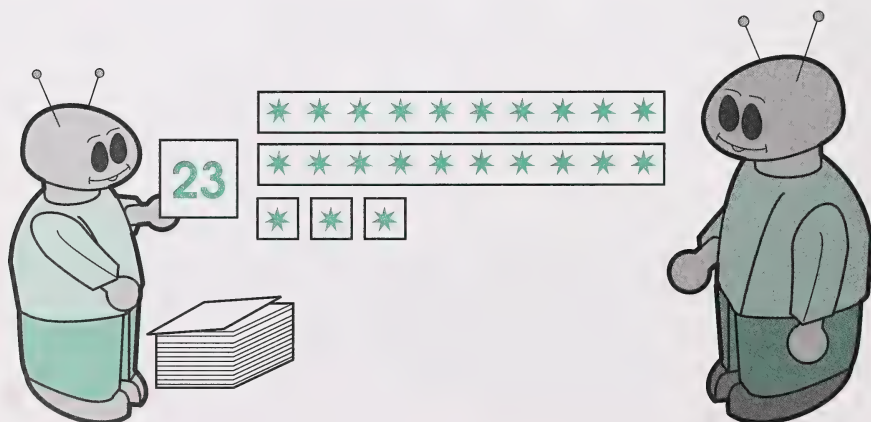
Step 2: Cut one group of ten into individual stamps or stickers.



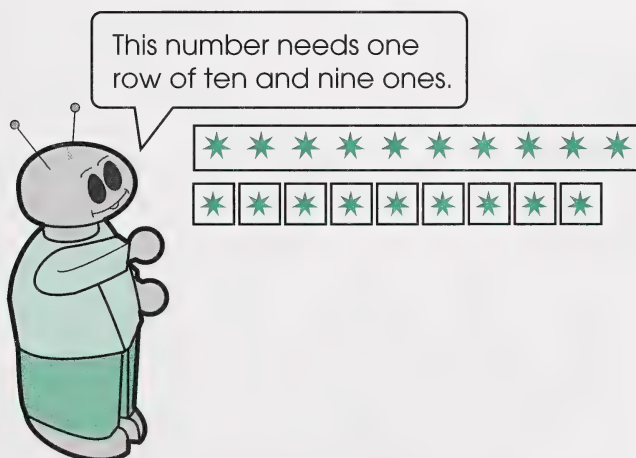
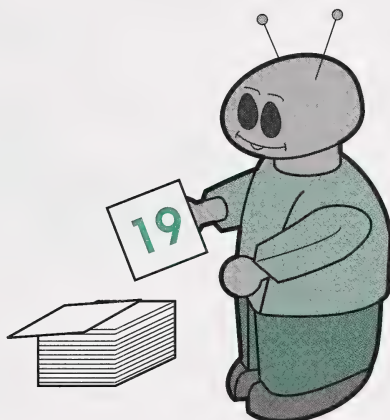
Step 3: Help the student cut blank recipe cards in half and print the numbers from 11 to 50 on the cards. Number cards for the numbers 1 to 10 were made in an earlier module.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Step 4: Place the 1 to 50 number cards face down, and then take turns choosing a number card. Use the strips and individual pieces to make models for each number.

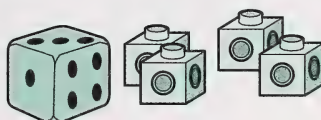


Step 5: Continue taking turns until your student has had the opportunity to practise making models of numbers or until the student gets tired.

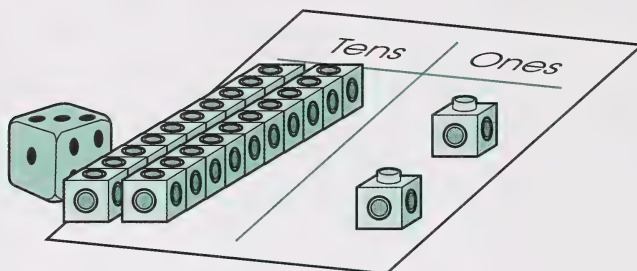


2. Roll and Trade

Step 1: With the student, take turns rolling a die to determine the number of plastic interlocking cubes (or another suitable substitute) to be put on the place-value mat.



Step 2: Continue to roll the die and add the rolled number to the counters already on the mat. When there are ten or more counters in the ones column, trade the ten cubes for a grouping of ten, and place the group in the tens column.



Play until your student gets tired.

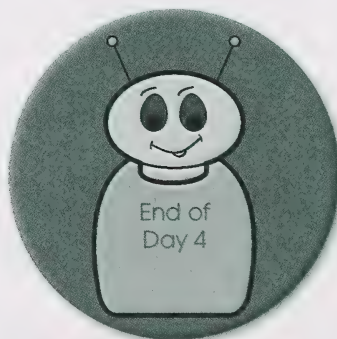
Materials

Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6A, and follow the directions to do the assignment for Day 4.

Then complete Day 4: Learning Log. Under Student's Thoughts, ask your student to shade in the face that describes what the student thinks about today's mathematics learning. Then print a sentence or two explaining why.



Day 5



Calendar Time

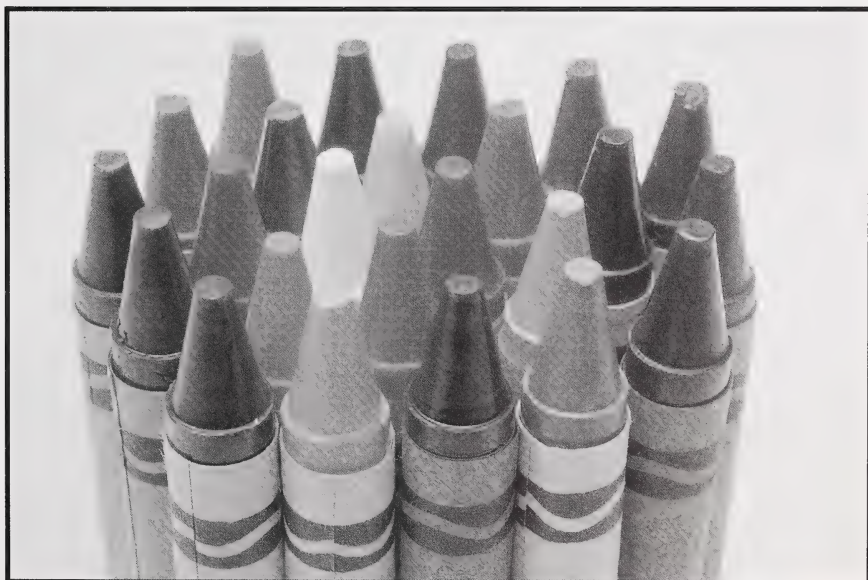
Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- estimating and counting the number of objects in a set of 0 to 50 objects
- comparing the estimate with the actual number
- recognizing and building sets that contain 0 to 50 members
- identifying place value

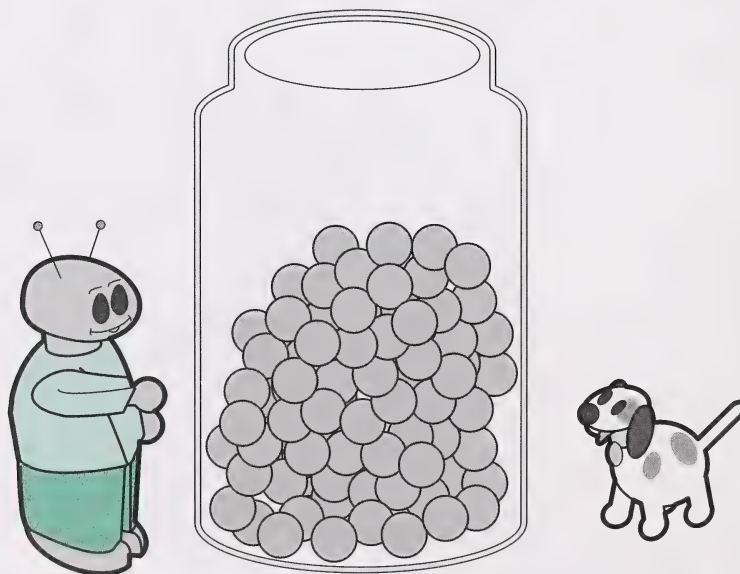


Vocabulary (spoken only)

There is no new vocabulary.

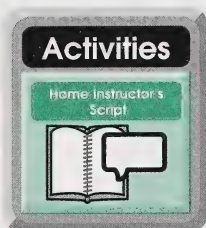
Materials Required

- box of required materials from the master list
- 50 marbles or another suitable substitute
- one jar large enough to hold 50 marbles or another suitable substitute
- a second jar smaller than the first one
- approximately 100 toothpicks
- various other types of counters, for example, plastic interlocking cubes, buttons, stir sticks, drinking straws cut in half, bread tags (optional)
- the 0 to 50 number cards (optional)
- five transparent bags (optional)



Developing the Concept

In a jar, place 50 marbles or another suitable type of counter. Then proceed with the following script.



Here is a jar full of marbles.

Estimate how many marbles are in the jar, and then record it.

Now, count the marbles in the jar.

How does your estimate compare with your actual count? (If applicable, challenge your student to count forward or backward to compare the difference between the estimate and the actual count.)

Here is a different jar. (Place a smaller jar in front of the student.)

Estimate how many marbles will fit inside this jar.

Record your estimate.

Check to see how many marbles will fit in the jar.

How does your estimate compare with your actual count? (If applicable, challenge your student to count forward or backward to compare the difference between the estimate and the actual count.)

Did estimating and counting the marbles in the first jar help you make your second estimate? Why or why not?

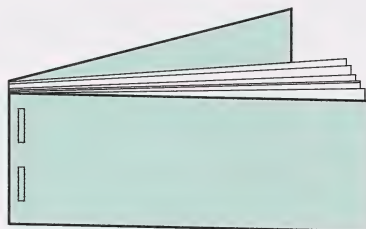
Applying the Concept

1. My Tens and Ones Booklet

Step 1: Fold one sheet of construction paper and five sheets of blank loose-leaf paper in half lengthwise. Cut along the fold.

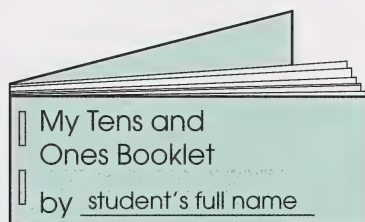


Step 2: Place the ten blank loose-leaf strips between the two strips of construction paper and staple them together on the left side.

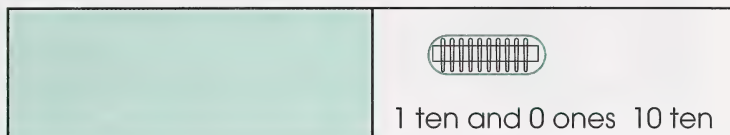


The construction paper will be the front and back cover of the booklet.

Step 3: Have the student create a cover page similar to the one shown below.



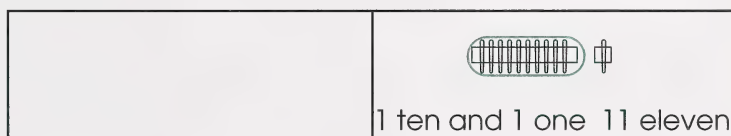
Step 4: On the first inside page of the booklet, have your student paste or tape ten toothpicks. Then draw a circle around the group of ten toothpicks.



Underneath the ten toothpicks, print **1 ten and 0 ones**, **10**, and the word **ten**.

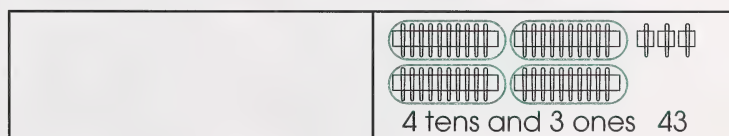
If glue has been used, make sure each page of the booklet is dry before starting on the next page.

Step 5: On the second inside page of the booklet, have your student paste or tape 11 toothpicks. Then draw a circle around the group of ten toothpicks.



Underneath the 11 toothpicks, print **1 ten and 1 one**, **11**, and the word **eleven**.

Step 6: For the remaining inside pages, ask your student to choose two-digit numbers to 50. Show each number with toothpicks, and print each number in the three different ways. Circle each group of ten.



Step 7: On the back of **My Tens and Ones Booklet**, ask the student to print the abbreviated form of the module and day number, M6D5.



Step 8: Have your student talk about this booklet with family and friends.

When the booklet is not being shared with others, place it in the Student Folder.

2. Calculator Time

Use script similar to the following to challenge your student.

Which buttons do you have to push to show 13 on your calculator?

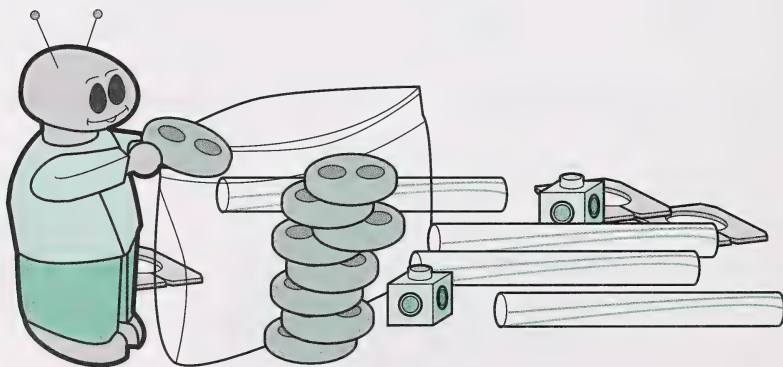
23? 33?

How would you show four more than 3 or three less than 8?

Enrichment (optional)

1. Counting Groups of Tens

Give your student various types of counters, such as buttons, stir sticks, drinking straws cut in half, or bread tags, to bag in groups of ten. Leave nine counters loose.



Once finished, place the number cards from 0 to 50 face down in front of the student.

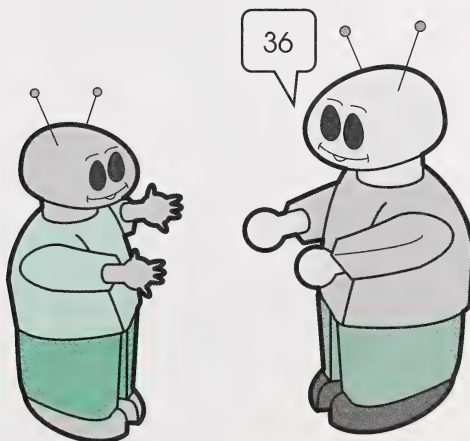
Take turns choosing a card from the pile. Use the bagged groups of tens and the loose counters to make the number shown on the card.



Occasionally make a mistake so that your student will have the opportunity to notice it and correct it.

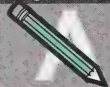
2. Finger Tens

Take turns saying a number from 0 to 50 and then showing that many fingers. For example, if the given number is 36, the student will open and close both hands three times and then show six fingers.



Materials

Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6A, and follow the directions to do the assignment for Day 5.

Then complete Day 5: Learning Log. Under Student's Thoughts, ask your student to shade in the face that describes what the student thinks about this day's mathematics learning. Then print a sentence or two explaining why.



Day 6



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- representing and describing numbers to 50 in a variety of ways

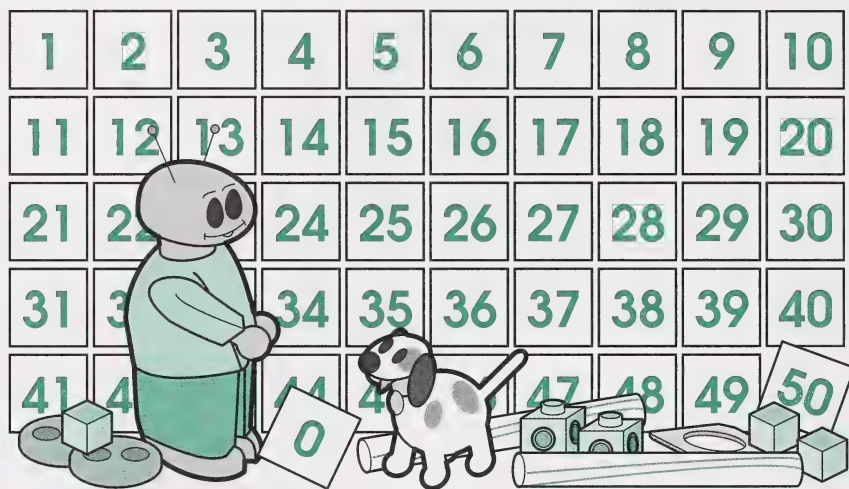


Vocabulary (spoken only)

There is no new vocabulary.

Materials Required

- box of required materials from the master list
- the 0 to 50 number cards
- five different collections of counters with each collection containing 50 counters, for example, plastic interlocking cubes, buttons, stir sticks, drinking straws cut in half, bread tags, or small candies



Developing the Concept

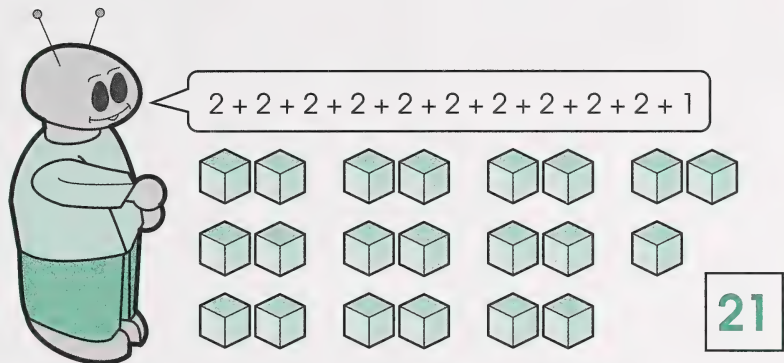
What does a number such as 23 mean? In today's lesson, your student will begin to develop the ability to represent and describe numbers to 50 in different ways.

Shuffle the 0 to 50 number cards, and place them face down in front of the student.

Have the student choose the top card and then group the counters to make the chosen number. For example, if the chosen number is 23, your student could make

- two groups of ten, with three left over
- four groups of five, with three left over
- eleven groups of two, with one left over

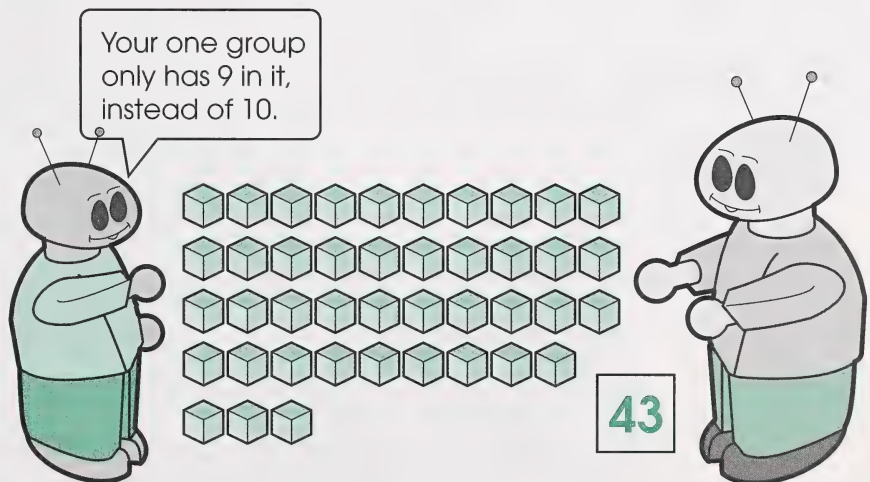
Once a way of grouping the number has been shown, use repeated addition to describe it.



Next, encourage your student to use the counters to explore other ways of grouping the number and describing the groupings using repeated addition.

Take turns picking a number card and showing it in different ways.

Monitor one another's groupings of the chosen number. Occasionally make an error to check on the student's understanding of a given number.



Applying the Concept

My _____, _____, and _____ Booklet

Step 1: Fold a sheet of construction paper in half to make a front and back cover of a booklet.

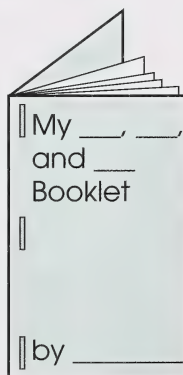
In between the halves of construction paper, place two folded sheets of blank loose-leaf paper to make the inside pages of the booklet. Staple the pages together along the fold.

Step 2: Have the student choose three numbers from 10 to 50 to illustrate in a booklet.

On the front cover of the booklet, have the student print the title **My** _____, _____, **and** _____ **Booklet**.

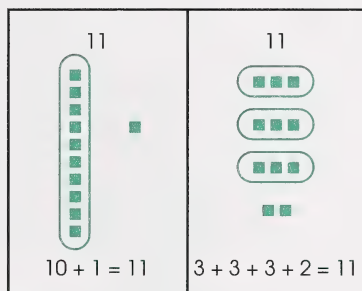
Have the student choose three different numbers and print these numbers in the blank spaces. For example, the booklet could be entitled **My 19, 26, and 43 Booklet**.

Ask the student to record the chosen numbers in order from smallest to largest.



Underneath the title, ask the student to print the word **by** and then his or her full name.

Step 3: Turn to the first set of inside pages. On these pages, have your student illustrate the grouping of the first number in two different ways and then use repeated addition to describe the ways. For example, if the chosen number was 11, the student might represent and describe the groups as follows.

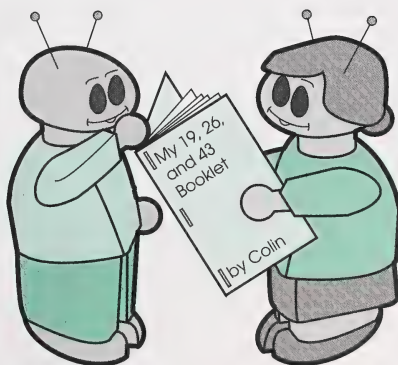
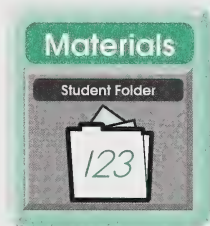


Be sure to have your student circle the groups. Have the student show the remaining two numbers in a similar fashion.

Step 4: Print the module and day number, M6D6, on the back of the booklet.

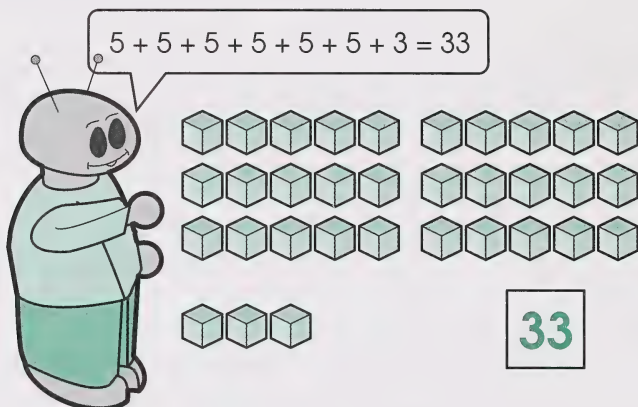
Encourage the student to read the booklet to family and friends.

When the booklet is not being shared with others, place it in the Student Folder.



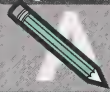
Enrichment (optional)

If you think that your student needs extra practice or a challenge, continue to have the student represent and describe numbers in different ways.



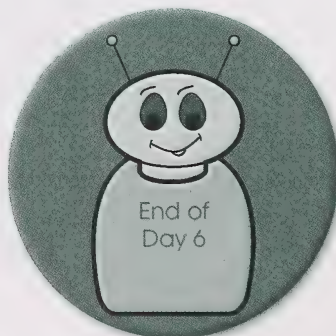
Materials

Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6A, and follow the directions to do the assignment for Day 6.

Then complete Day 6: Learning Log. Under Student's Thoughts, ask your student to shade in the face that describes what the student thinks about today's mathematics learning. Then print a sentence or two explaining why.



Day 7



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- representing and describing numbers to 50 in a variety of ways



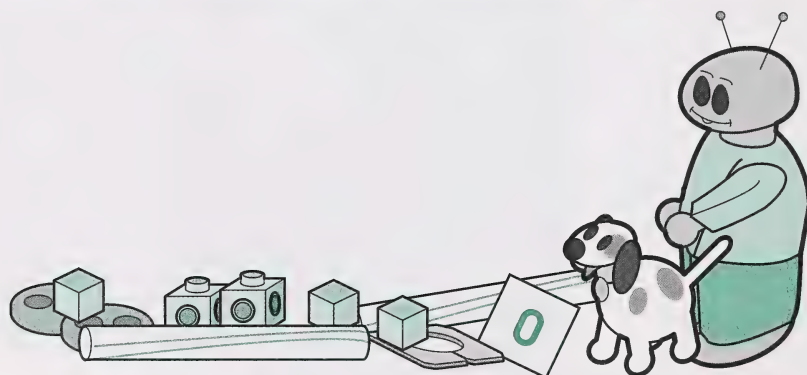
Vocabulary (spoken only)

salesperson
inventory
buyer

Materials Required

- box of required materials from the master list
- the 0 to 50 number cards
- four different collections of counters with each collection containing 50 counters, for example, plastic interlocking cubes, buttons, stir sticks, drinking straws cut in half, bread tags, or small candies

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



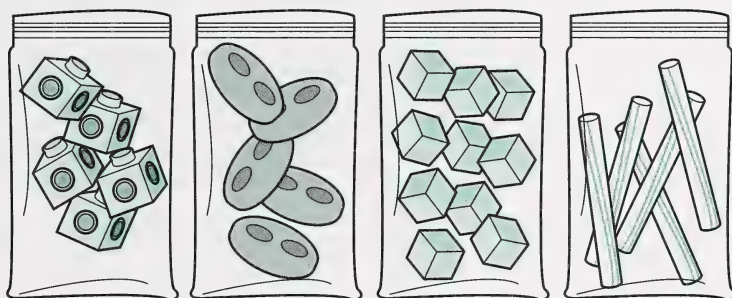
Developing the Concept

In today's lesson, your student will continue to develop the ability to represent and describe numbers to 50 in different ways.

Shuffle the 0 to 50 number cards and place them face down in front of the student, along with five different collections of counters.

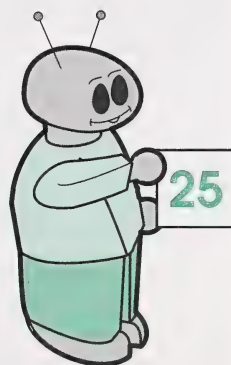
Each collection should contain at least 50 counters.

Suggest that some of the counters be bagged or bundled into groups of fives and tens for ease of counting.



Have the student pick the top card and then use the counters to show different ways of making the chosen number. Guide the student as necessary.

Take turns picking a number card and showing it in different ways. For example, the student could show the number 25 as five sets of five interlocking cubes or two bundles of ten sticks with 5 loose ones.

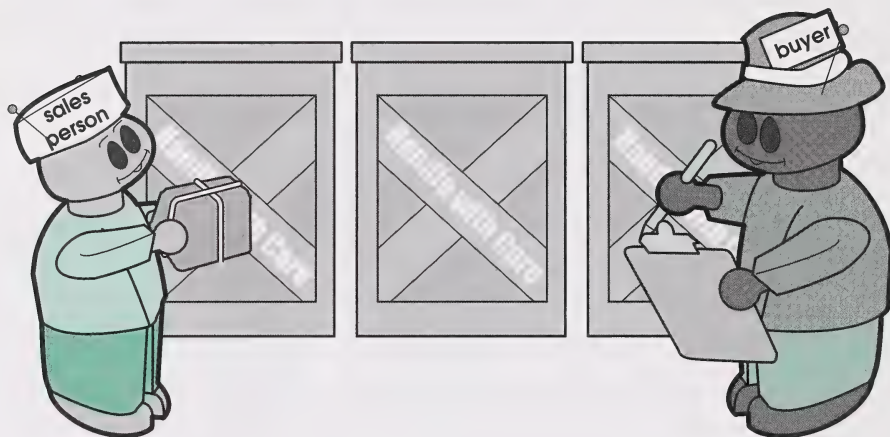


Encourage your student to help you in monitoring the construction of each number. Occasionally make an error to check the student's understanding of the number system.

Applying the Concept

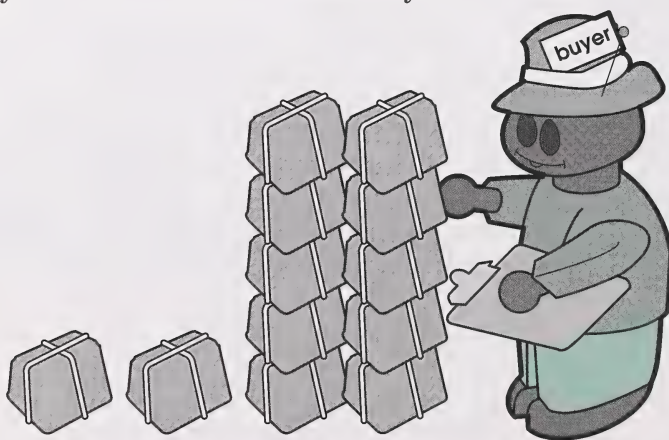
Deliver the Order

For each round of this game, the **buyer** fills in an order form for one item, with a quantity from 1 to 50. The order is then given to the **salesperson**.



The salesperson fills the order by collecting the appropriate number of items and giving them to the buyer.

The buyer checks the order for accuracy.



Take turns pretending that one of you is a buyer and the other one is a salesperson.

Enrichment (optional)

1. Home Inventory

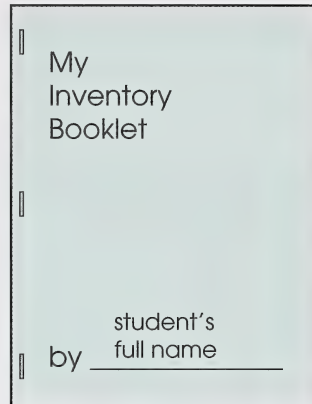
Have your student take **inventory** of ten items around the house. Explain to the student that inventory is a complete list of items someone owns.

Home Inventory Sheet			
Item	How Many	Tens	Ones



2. What's in the Factory?

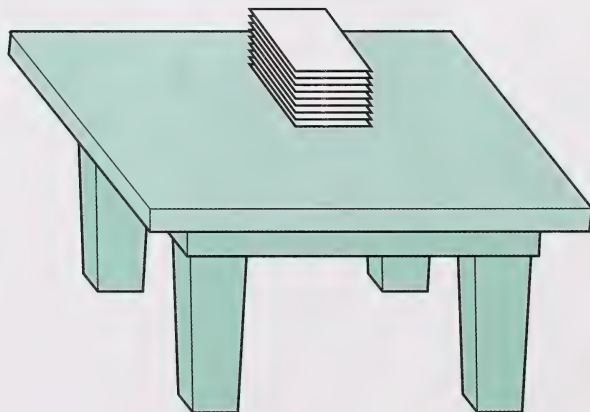
Step 1: Help the student make an inventory booklet similar to the one shown below.



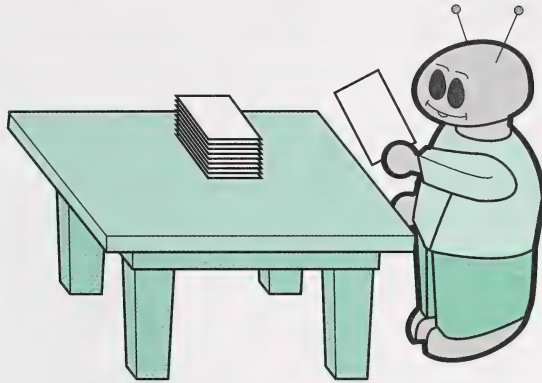
Step 2: Discuss why people take inventory in a factory.

Step 3: Identify a flat surface (table top or floor space) as the factory.

Shuffle the 0 to 50 number cards and place them face down on the table.






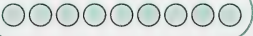

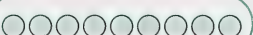

Step 4: Explain to your student that now he or she must take inventory of what is in the factory. To do so, first the student must choose a number card.



Use a different collection of counters to make each chosen number on the place-value mat (factory shelf).

Step 5: Have the student take inventory of ten different sets of items on the mat, and then have the student record the name and number in groups of tens and ones in the booklet.

Tens	Ones
	
	

<div style="text-align: center;">32 buttons</div> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; margin: 2px;">  </div> <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; margin: 2px;">  </div> <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; margin: 2px;">  </div> <div style="margin: 2px;">  </div> </div> </div>
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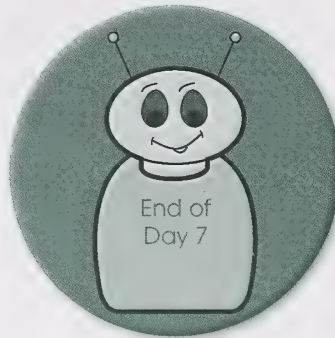
Materials

Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6A, and follow the directions to do Day 7: Assignment 1.

Next, follow the directions to do Day 7: Assignment 2.



Day 8



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- representing and describing numbers to 19
- counting numbers to 19
- printing the numbers to 19



Vocabulary (spoken only)

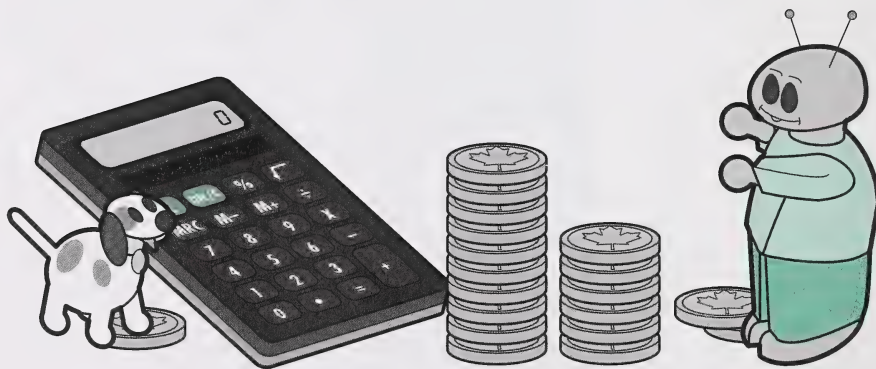
number line
symbol

display
key in

Materials Required

- box of required materials from the master list
- long strip of paper, approximately 80 cm by 6 cm
- 0 to 19 number cards (Separate these from the 0 to 50 number cards previously used.)
- 19 pennies
- calculator
- several long strips of paper

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19



Developing the Concept

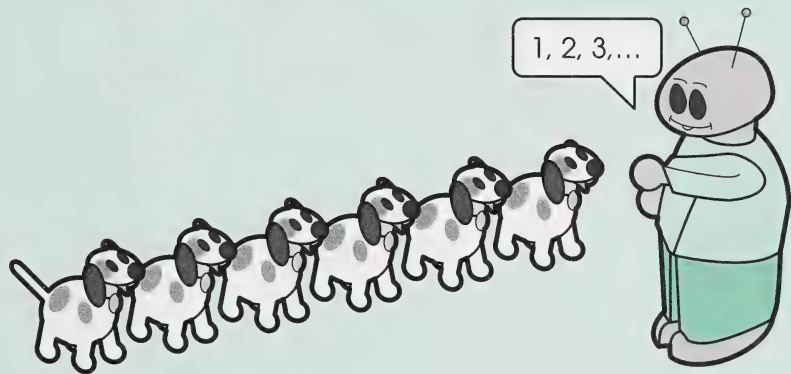
Activities

Teaching Tip

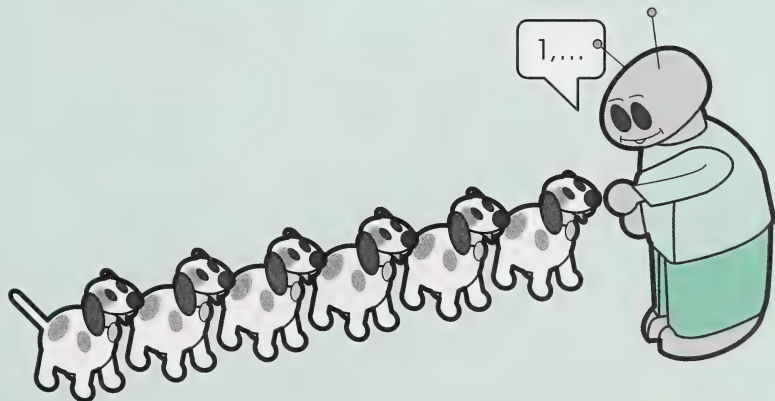


Counting practice is essential in the development of number sense. Through practice, the student will move from **rote** (simple memorization of numbers) to **rational** counting. As your student develops from one level of counting skills to the next, he or she should begin to recognize the following:

- Any group of objects can be counted.

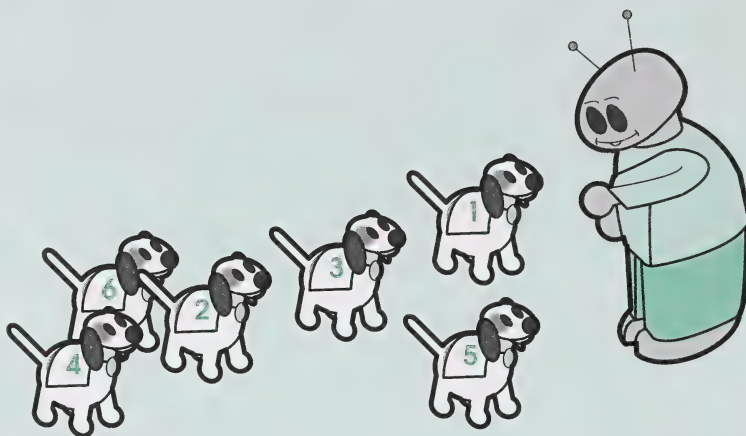


- Numbers are counted in a specific sequence.
- When counting, only one number is assigned to each object.



Continued . . .

- It does not matter what order objects are counted in: the total number will remain the same.



- When counting, the last number named is the total amount of objects in the set.

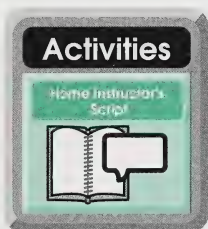


Using a ruler, divide a long strip of paper into 20 squares.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----

Then with a thin marker, print the numbers 0 to 19.

Now that a **number line** has been made, provide the following instructions for the student.



Take an eraser or another small toy of your choice, and set it on 0.

Move the chosen item along the number line 4 squares.

What number square did you land on? (4)

Now, move it 6 more squares.

What number square are you on? (10)

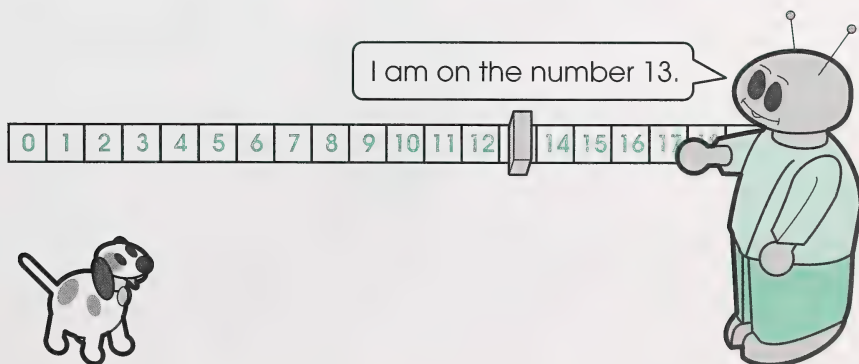
Return to 0.

Move your chosen item 8 squares.

What number are you on? (8)

Now, move it 5 more squares.

What number square are you on? (13)



Continue to give directions until the chosen item has been moved to all the numbers between 10 and 19.

Next, mix up the 0 to 19 number cards, and then use the following script to guide your student.

Place these numbers in order from 0 to 19.

Now, let's count the numbers from 0 to 19 in order.

From a collection of counters, separate 19 of them.

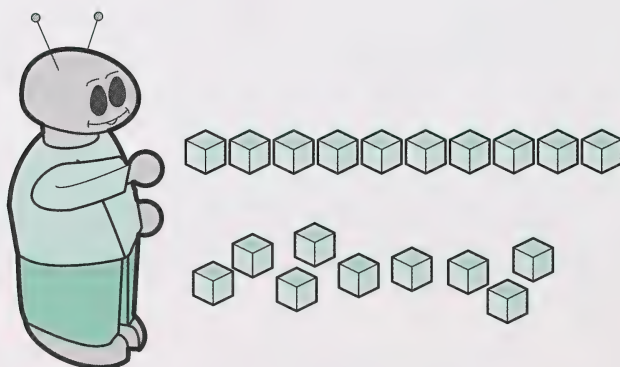
Say each number name aloud as you count each counter.

Take 10 objects from the 19 and group them together.

How many objects remain? (9)

Another way to say the number 19 is to say "one group of 10 and 9 ones."

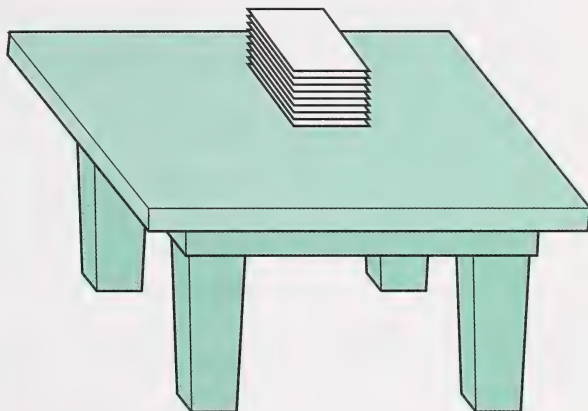
Count aloud the 19 objects again.



Applying the Concept

Using the number cards and 19 pennies, provide instruction similar to the following.

Help me shuffle the number cards, and then we will place the deck face down on the table.



Pick the **top** number card from the deck and set it in front of you.

I want you to show me the chosen number using the pennies that I have given to you.

(Help the student as necessary.)

Now, use the pennies to count out the number 3.

Next, show me the number 9.

Show me 11 pennies.

Count out the number 16.

Continue to select one card at a time from the top of the pile until the student has had the opportunity to show each amount from 0 to 19.

If good effort was shown during this activity, offer the student some form of praise. For example, you could give your student a pat on the back, a sticker, or both.

Calculator Time

Using a calculator, guide your student with the following script.

Press the number **1**.

Now, press the + **symbol**.

Press the number 1 and the + **symbol** again.

What number is on the **display**? (2)



Key in the number 1 and the + **symbol**.

What number is showing on the **display**? (3)

Continue to **key in** a 1 and then a + **symbol**.

Tell me what number the **display** shows each time it changes from one number to the next.

What are we using the calculator to do?

We are counting forward from 1.

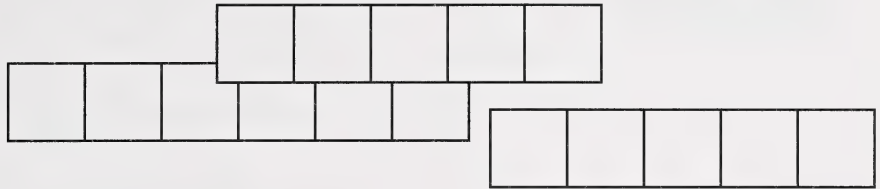
Continue to **key in** the number 1 and the + **symbol** until you reach 19.



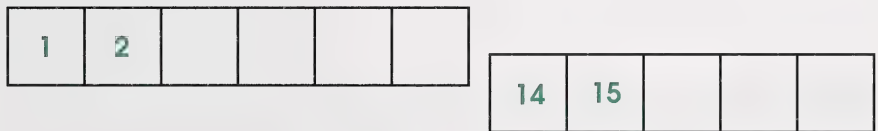
Enrichment (optional)

1. Number Lines

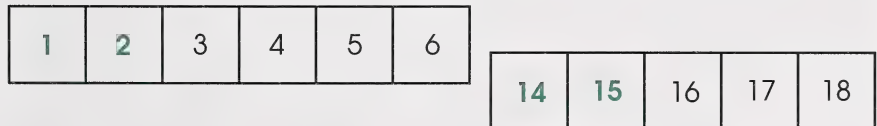
Step 1: For this activity, you will need several long strips of paper. Divide each strip of paper into five or six squares.



Step 2: On each strip, print two consecutive numbers in the first two squares.

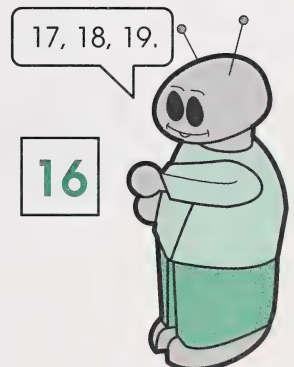


Step 3: Ask the student to fill in the rest of the squares with the correct numbers.



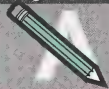
2. Count Forward

Place a number card on the table and instruct the student to count forward to 19 from that number.



Materials

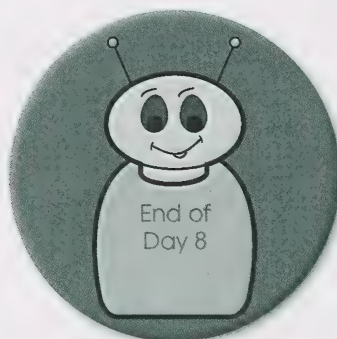
Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6A, and follow the directions to do Day 8: Assignment 1.

Next, follow the directions to do Day 8: Assignment 2.

Then complete Day 8: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning. For example, was it easy or hard to represent and describe numbers to 19?



Day 9



Calendar Time

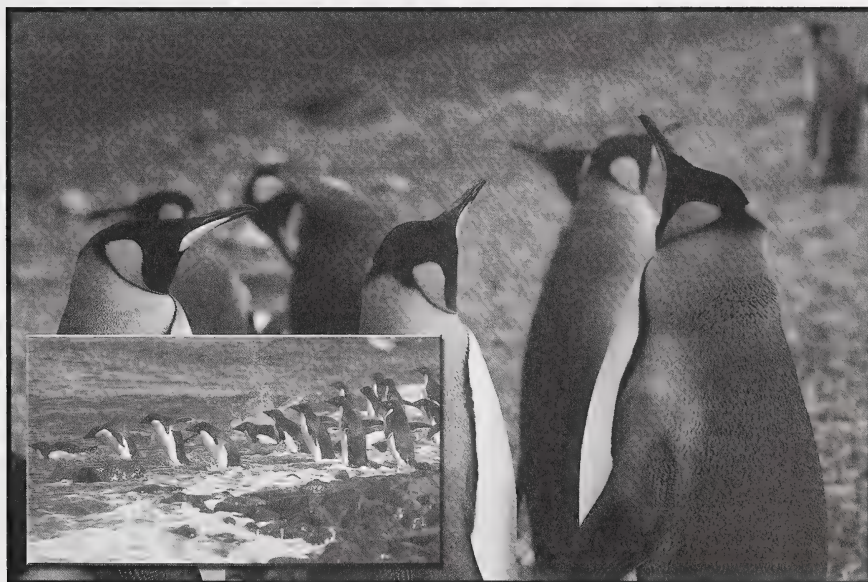
Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- identifying the greater or lesser amount, up to 19
- identifying the number before, after, and between a given number to 19



Vocabulary (spoken only)

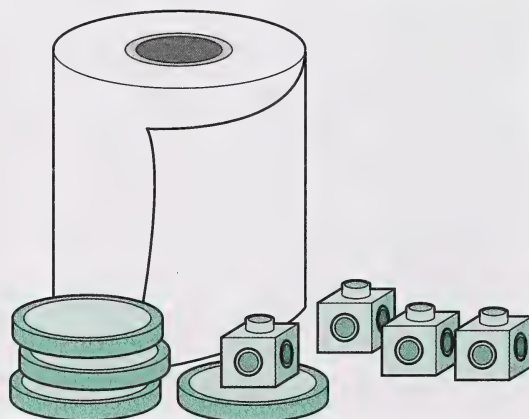
fewer
greater
less

before
after
between

Materials Required

- box of required materials from the master list
- 19 counters, for example, plastic interlocking cubes, wooden craft sticks, sticks, or buttons
- clear plastic bag (or an elastic band)
- 0 to 19 number cards
- strips of paper approximately 80 cm by 6 cm (optional)
- five round counters large enough to cover a number on the number line (optional)
- two sets of 19 sticks or another suitable substitute (optional)
- book or large piece of cardboard (optional)

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19



Developing the Concept



Two sets with **fewer** than ten objects are more easily compared than two sets containing larger amounts. When asked to make comparisons between larger sets, encourage your student to practise such strategies as estimating, one-to-one correspondence, or counting to compare the amounts.

You could review Module 1: Day 3 Teaching Tip for further information on such terms as **greater**, **less**, and **fewer**.

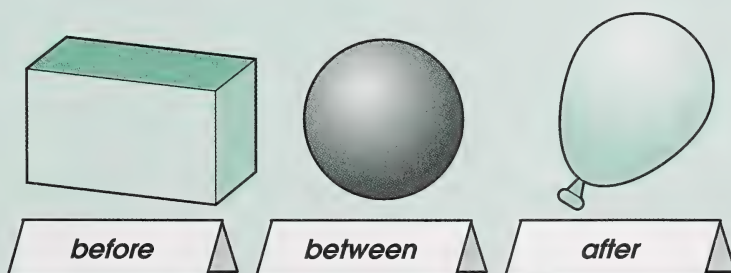
Before applying the terms **before**, **after**, and **between** to numbers, discuss their meaning using a few of the student's objects. For example, have your student arrange three favourite toys in a row. Print the word **before** on one blank recipe card, the word **after** on a second card, and the word **between** on a third card.

before

between

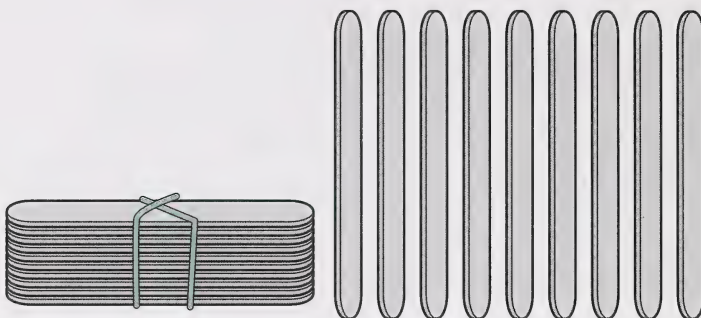
after

In front of each toy, place the corresponding position card. Then question your student as to which item comes before, between, and after.



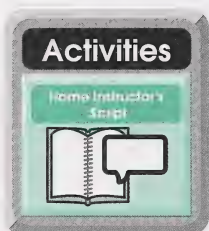
Ask the student to rearrange the toys, and then label each one with the appropriate position card to ensure that your student is not just associating the words with specific objects, but with the position that object occupies.

Take out 19 counters. Use a transparent bag or an elastic band to make one set of ten. Leave the remaining nine counters loose.



In front of your student, place three of the nine counters.

Continue with the following script.



There are 3 counters in front of you.

Add 1 counter to my 3.

How many counters are there now? (4)

4 counters are **more**, or **greater** than, 3.

3 counters are **fewer**, or **less** than, 4 counters.

Place the set of 10 counters in front of you.

Count the set to make sure there are 10.

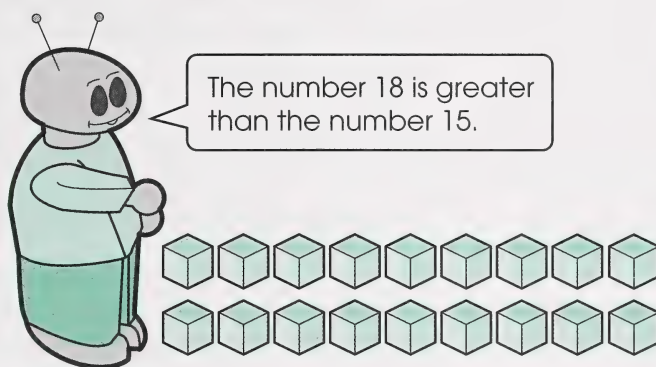
Add 4 counters to the 10.

How many counters are there now? (14)

Are 14 counters **greater** than or **less** than 10 counters? (**greater** than)

Are 10 counters **greater** than or **less** than 14 counters? (**less** than)

Use the previous dialogue to guide your student in the completion of another two greater-than and less-than situations.



In front of your student, place the 0 to 19 number cards. Then continue with the following script.

I would like you to arrange these number cards in order from the smallest amount to the greatest amount.

Which number would you put down **first**? (0)

Which number would come **next**? (1)

Guide the student in this manner until all the cards have been placed in the correct order. Continue the script.

Point to the card that has the number 2 on it.

Now, point to the card that comes **before** the number 2.

What number comes **before** number 2? (1)

Point to the card that has the number 10 on it.

What number comes **before** 10? (9)

Point to the card that comes **after** the number 10.

Tell me the number that comes after the number 10.

Point to the card that says 14.

Say the number.

Now, point to the card that comes **after** 14.

Tell me the number that comes **after** 14.

Place one finger on the number 3 and one finger on the number 5.

What number comes **between** the number 3 and the number 5? (4)

Point to the numbers 16 and 18.

What number comes **between** these two numbers? (17)

The number 17 comes between 16 and 18.



Continue until the student has had the opportunity to practise identifying numbers before, after, and between.

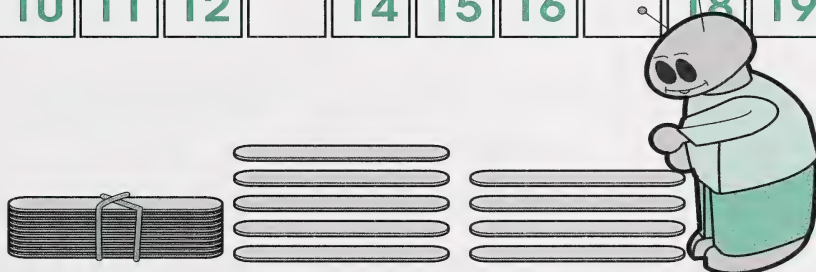
Applying the Concept

Ask your student to place the 0 to 19 number cards in order from smallest to largest.

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19

Give the student the 19 counters that were used earlier, and then turn over the 2, 5, 8, 13, and 17 number cards so that they are face down.

0	1		3	4		6	7		9
10	11	12		14	15	16		18	19



Continue with the following script.

Show me 1 counter.

Using your counters, show me the number that comes **after** 1.

How many counters are you showing me?

Point to where the number 2 card should be.

Turn over the card, and check to see if the number 2 is written on it.

Look at the next card that is turned face **down**.

Use your counters to make the number that comes **before** it.

What number did you make? (4)

What is the number that is turned face down? (5)

The number 5 comes **after** the number 4.

Look at the next card that is face down.

What numbers come **before** and **after** that number? (7 and 9)

Point to them.

What number comes **between** these two numbers? (8)

The number 8 comes **between** 7 and 9.

Point to the next number that is turned face down.

What number comes **before** it? (12)

What number comes **after** it? (14)

What two numbers is this card **between**? (12 and 14)

What number comes **between** 12 and 14? (13)

Turn the number card over to see if it is the number 13.

Use the counters to make the number 13.

Now, use your counters to make a number that is less than 13.

What number did you make?

Point to the card that says that number.

Look at the last card that is turned over.

What number comes **before** it? (16)

What number comes **after** it? (18)

What two numbers is this card **between**? (16 and 18)

What number comes **between** 16 and 18? (17)

Turn the number card over to see if you are correct.

Make the number 17 with your counters.



The concepts of **before**, **after**, and **between** may be too difficult for your student at this point. Continue to discuss and review these concepts whenever the opportunity arises. They will be reviewed in Module 7.

Enrichment (optional)

1. Cover the Number

Step 1: Print the numbers from 0 to 19 on a strip of paper.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----

Step 2: Ask the student to cover the numbers one at a time according to your instruction. Continue with the following directions.

Cover the number that comes **before** 4.

Cover the number that comes **after** 16.

Cover the number that comes **between** 6 and 8.

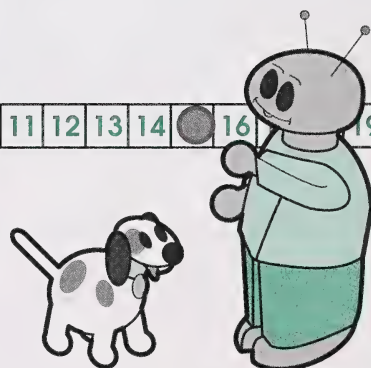
Cover a number that is **greater** than 11.

Cover a number that is **less** than 5.

0	1	2	●	4	5	6	●	8	9	10	11	12	13	14	15	16	●	18	19
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	---	----	----

Step 3: Remove all the counters and repeat the activity until the student has had the opportunity to practise the concepts of before, after, and between.

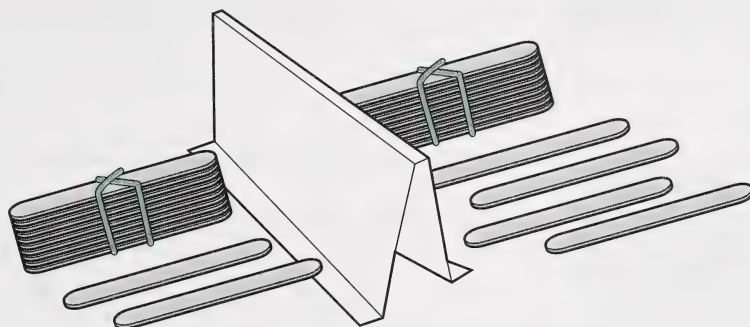
0	1	2	3	4	●	6	7	8	9	●	11	12	13	14	●	16	19
---	---	---	---	---	---	---	---	---	---	---	----	----	----	----	---	----	----



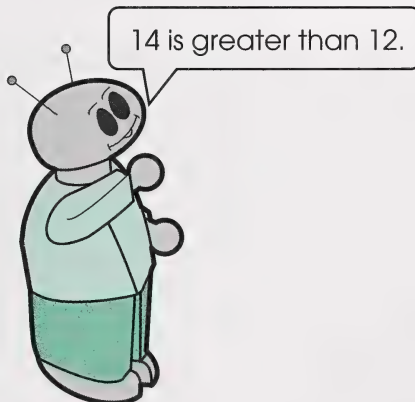
2. Greater or Less Than

Step 1: Set up a book or large piece of cardboard as a divider.

Step 2: Both you and the student take 19 counters and then use them to show a number on your own side of the divider.



Step 3: Lift the divider and compare numbers. Ask the student which number is greater and which number is less.



Materials

Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6A, and follow the directions to do the assignment for Day 9.

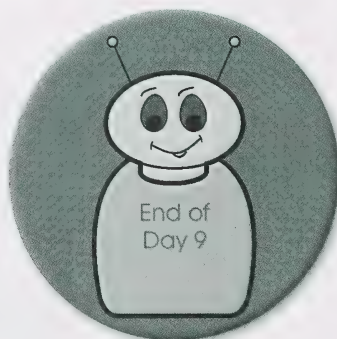
Then complete Day 9: Learning Log. Under Student's Thoughts, ask the student to shade in the face that describes what the student thinks about today's mathematics learning. Then print a sentence or two explaining why.

Materials

Mathematics
Assignment Booklet



At the end of Mathematics Assignment Booklet 6A, follow the directions to complete Day 9, Student Folder Items. Take the required items from your Student Folder. Submit these items to your student's teacher for marking at the time the teacher has requested them.



Day 10



Calendar Time

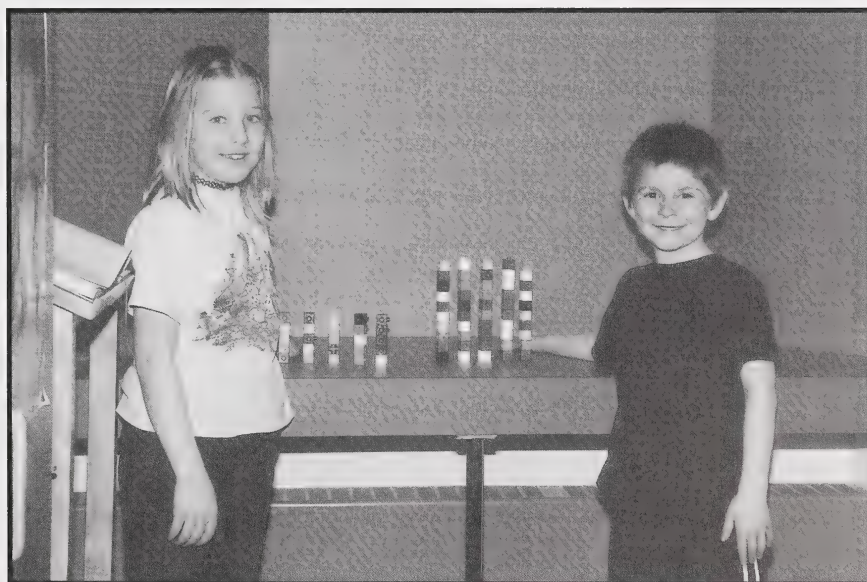
Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- recognizing and building sets that contain 0 to 50 members
- identifying place value to 50
- using manipulatives to demonstrate and describe the processes of addition and subtraction to 18



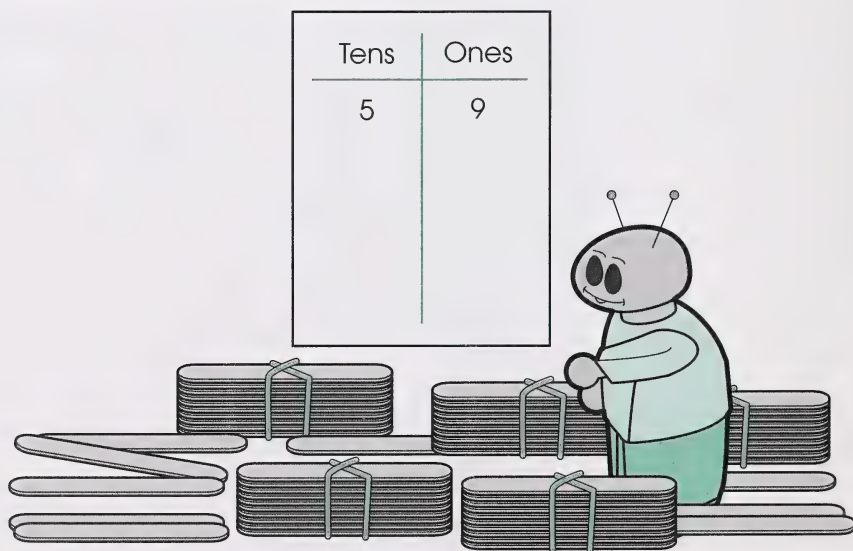
Vocabulary (spoken only)

place value

Materials Required

- box of required materials from the master list
- five bags or bundles of ten counters, such as marbles, interlocking cubes, or wooden craft sticks
- nine counters
- place-value mat
- water-soluble marker (optional)
- 0 to 50 number cards
- 0 to 9 number cards made from red construction paper (similar in size to the 0 to 50 number cards)
- 1 to 9 number cards made from white construction paper

Keep reusable materials for future activities.



Developing the Concept

In today's lesson, your student will review the four important attributes of **place value**.



In Module 6: Day 4, you learned that the number system has four very important attributes:

- place value
- use of zero
- base of ten
- additive property

In place value, the position of a digit represents its value. For example, in the number 23, the two means twenty or two tens, and the 3 means three ones.

Base of ten means that the system is based on ten digits, 0 to 9.

The use of zero refers to zero being used to represent that something is missing. For example, in the number 40, the zero is used to show that there are no ones.

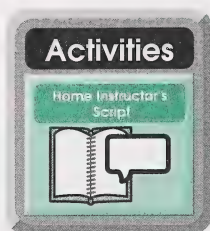
The additive property means that numbers are added together according to their place value. The ones are added together, and the tens are added together.

In front of your student, set out

- five bags or bundles with ten counters in each one
- nine loose counters
- place-value mat
- water-soluble marker
- 0 to 50 number cards

Shuffle the 0 to 50 number cards, and place them face down on the table.

Next, provide the following instructions.

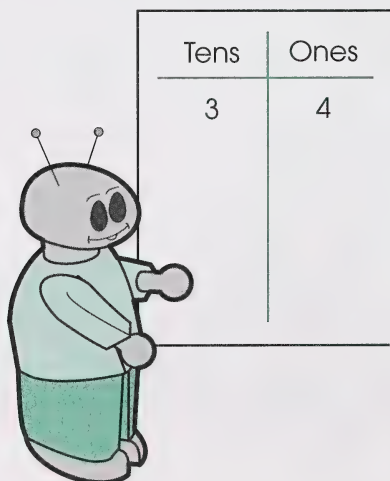


Choose a number card.

Now, use your counters to make the number shown on the card. (Help the student as necessary.)



Next, on the place-value mat, show how many groups of tens and how many ones you needed to make your number. (Continue to help your student as necessary.)



Take turns choosing a number card, showing the number with counters, and showing it on the place-value mat.

Monitor one another's construction of the chosen number.

Occasionally make a mistake to check your student's understanding of place value.

Applying the Concept

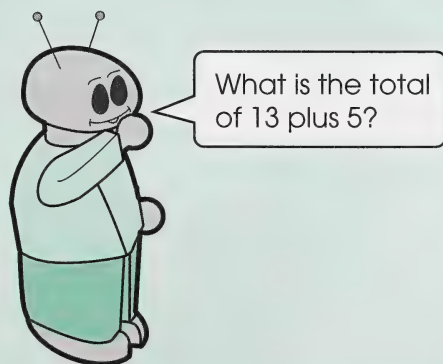


In Grade One, a student is required to use manipulatives (counters) to demonstrate and describe the processes of addition and subtraction of numbers to 18.

You may find, however, that you need to adapt the following activity to better meet the developmental needs of your student.

For example, if your student is experiencing difficulty adding and subtracting one-digit numbers, continue to practise these numbers until a proficient level of skill is reached.

If your student has no difficulty adding and subtracting one- and two-digit numbers to 18, you could provide activities that challenge adding and subtracting to 50.



Shuffle the 1 to 9 white number cards and the 0 to 9 red number cards, and place each deck face down on the table.

Next, provide the following instructions.

Choose a white number card.

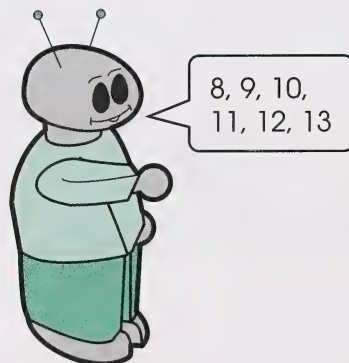
Now, use your counters to make the number shown on the card. (Help the student as necessary.)

Next, on the **place-value** mat, show the number. (Continue to help your student as necessary.)

Tens	Ones
	8

Choose a red number card. From your collection of counters, add this second number to your first number.

How many counters do you have now?



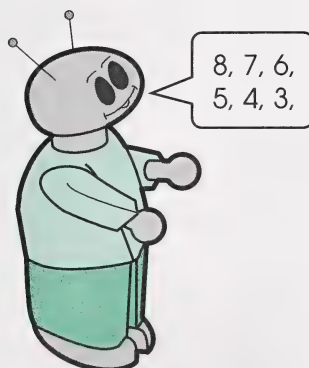
If your student does not automatically use counters to count forward from the first number to determine the total, encourage this strategy.

Next, have your student show the added amount on the place-value mat similar to what is shown below.

Tens	Ones
	8
	5
1	3

Draw a line underneath the second number; and then with the aid of counters, demonstrate for your student how to add the two numbers.

After the student has had time to practise adding the second number to the first one, repeat a similar activity, but this time subtract the second number from the first.



Take turns choosing white and red number cards and showing the addition and subtraction process with counters on the place-value mat.

When subtracting, encourage the student to count backward.

Monitor one another's work. Occasionally make an error to check your student's knowledge of place value and the processes of addition and subtraction.

If the number 0 is chosen, discuss with your student that zero is the symbol for nothing.

Enrichment (optional)

1. Show Me

Step 1: Give the student nine bags or bundles with ten counters in each one.

Step 2: Ask the student to show you different amounts of tens. For example,

Show me 8 tens.
Show me 2 tens.



Step 3: Ask the student how many counters there are in total.

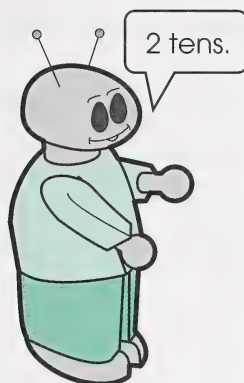


Step 4: Vary the activity by asking the student to show you a number. For example,

Show me 80.
Show me 20.

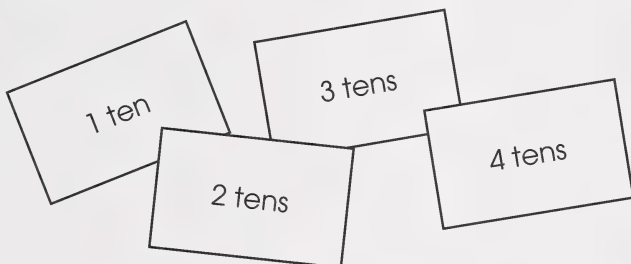


Step 5: Ask the student how many tens in all.

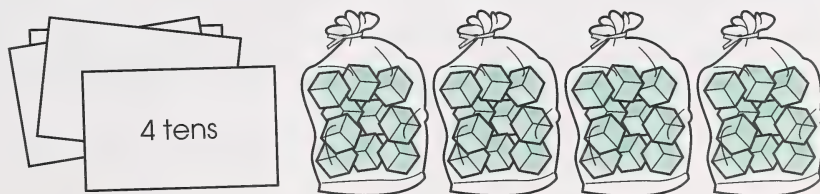


2. Match the Card

Step 1: On nine blank recipe cards print from 1 ten to 9 tens. The cards should look similar to the ones shown below.



Step 2: Mix up the cards and set them face down in front of your student. Ask the student to turn over the top card and then use the collection of counters to make the number.



Materials

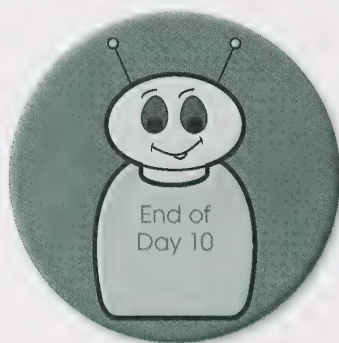
Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6B, and follow the directions to do Day 10: Assignment 1.

Next, follow the directions to complete Day 10: Assignment 2.

Then complete Day 10: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning. For example, was it easy or hard to identify place value?



Day 11



Calendar Time

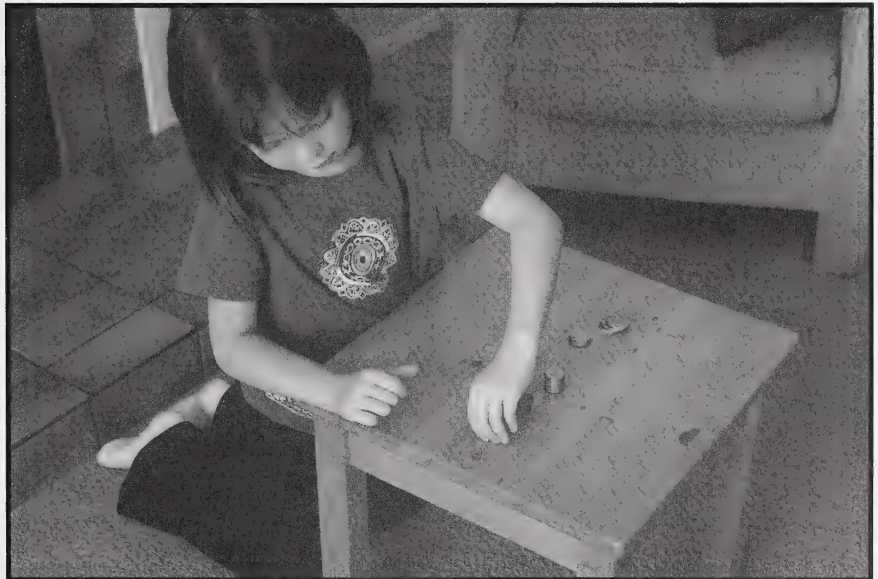
Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- recognizing and naming pennies, nickels, and dimes
- stating the value, in cents, of pennies, nickels, and dimes
- creating equivalent sets of coins up to ten cents



Vocabulary (spoken only)

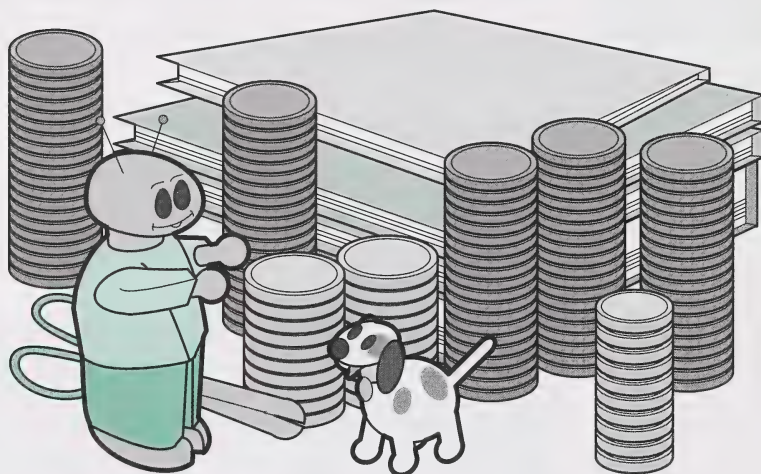
price tag
cents
cent sign
money

pennies
costs
trade
nickels

dimes
value
worth

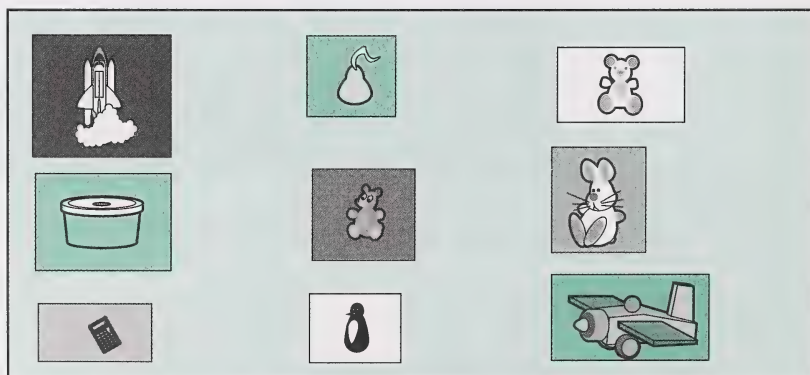
Materials Required

- box of required materials from the master list
- old magazines or catalogues
- nine small blank pieces of paper to use as price tags
- 100 pennies, 20 nickels, and 10 dimes
- 19 wooden craft sticks or other suitable counters (optional)
- elastic bands or transparent bags (optional)
- ten small toys or other suitable objects for sale (optional)



Developing the Concept

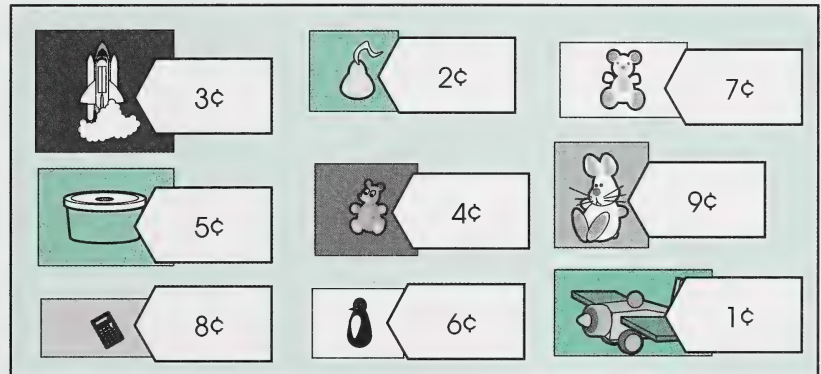
With your student, find and cut out nine small pictures from an old magazine or catalogue. Space these pictures evenly on a large piece of construction paper as shown in the following illustration.



When finished, cut out nine small pieces of blank paper to use as **price tags**.

On the tags, print prices from one to nine **cents**, and then glue each one to the right of a chosen picture.

Point out the **cent sign** to the student and explain that this sign tells the reader that **money** is involved.



Use this price chart, a blank sheet of paper, a pencil, and ten **pennies** for the following activity.



Point to the item that **costs 3 cents**.

On your paper, print **3 cents**.

Now, point to the item that **costs 1 cent**.

Print **1 cent** under the **3 cents**.

Add 1 cent and 3 **cents**.

How much would those two items **cost**?

Show me 4 cents with your **pennies**.

Point to the item that **costs 5 cents**.

Print **5 cents** on your paper.

Point to the item that **costs 2 cents**.

Print **2 cents** on your paper.

Add 5 **cents** and 2 **cents**.

How much money do you need to buy both items?

Show me 7 **cents** with your **pennies**.

Repeat this activity a few more times, continuing to ask your student to locate and total two items that **cost** less than ten cents.

Applying the Concept

Using the ten pennies and the price chart from Developing the Concept, proceed with the following script.

Point to the item that **costs 7 cents**.

Show me 7 **cents** using the coins I gave you.

Find the item that **costs 2 cents**.

Use the coins to show me 2 **cents**.

Add the 7 **cents** and the 2 **cents**.

What is the total?

You are showing me 9 **cents**.

What do you need to add to the 9 **cents** to make 10 **cents**?

Make 10 **cents**.





In the upcoming activity, your student will be asked to **trade** pennies for **nickels** and **dimes**.

Trading pennies gives your student the opportunity to make the transition from **proportional** models to **non-proportional** ones.

Proportional models show proportion in physical size. For example, in base ten blocks, 1 rod = 10 cubes.

Non-proportional models, such as money, do not show any size relationship. For example, ten pennies are physically bigger than a dime, but are equal to a dime in **value**.

Instead of focusing on value, young children often concentrate on physical **proportionality**, which is why they will trade a dime for one or two pennies.

It is important that your student have a clear understanding of proportional models before moving on to non-proportional models.

Place a dime in one of your student's hands and a penny in the other hand.

Encourage your student to talk about the distinctive features of each coin (for example, size, colour, inscriptions, value).

Next, have your student hold ten pennies in one hand and continue to hold the dime in the other hand. Talk about how the value of the coins in both hands is the same.



Now, remove the ten pennies from the one hand and put two nickels in their place.

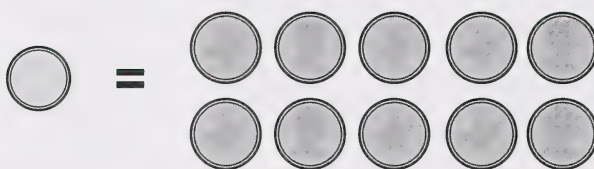
Again, encourage your student to talk about the distinctive features of each coin and how the value of the two nickels is the same as one dime.

Then continue with the following script.

A **dime** has the same **value** as ten **pennies** or two **nickels**.

How much is a **dime worth**? (10 cents)

One dime is worth 10 cents.



From the collection of coins you have in front of you, make **9 cents** (9 pennies or 1 nickel and 4 pennies).

Now, show me **7 cents** (7 pennies or 1 nickel and 2 pennies).

Use 2 coins to make **10 cents** (2 nickels).

Trading Pennies for Nickels and Dimes

Take 100 pennies and put them in bags. Each bag should have between 11 and 19 pennies.

Place a collection of nickels and dimes beside you.

At first, have the student take one bag and trade the contents with you for nickels or dimes. For example, if there are 16 pennies in the chosen bag, the student could trade 10 of the 16 pennies for a dime, 5 pennies for a nickel, and have one remaining penny.

The nickel and penny would then be added to the next bag to be traded.

After each trade, guide your student to describe the results. “I had 16 pennies. I traded 10 of them for a dime, 5 of them for a nickel, and I had one penny left over. One dime, one nickel, and one penny equals 16 cents.”

By the end of the game, the student should have a collection of 10 dimes.

Take turns trading until your student has had the opportunity to practise making equivalent sets of coins to ten.

Enrichment (optional)

1. Match the Sets

Step 1: Take ten sticks and place an elastic band around them. Leave the remaining nine sticks loose. Give the student the sticks while you keep the coins.

Step 2: Show the student a number between 0 and 19 with the coins. Ask the student to show the same number using the sticks.

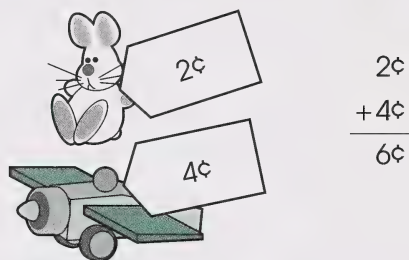


Step 3: Continue until you have shown all the numbers between 0 and 19; then switch materials. You can show the number with the sticks and your student can show the number with the coins.

2. The 10 Cents Store

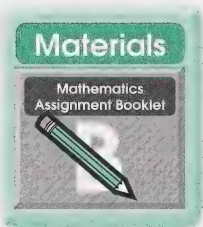
Step 1: Cut a piece of paper into small rectangles to use as price tags. Print prices from zero to nine cents on each tag, and then tape each tag to an item.

Step 2: Ask the student to choose two items. Instruct the student to count out the correct amount of pennies for each item and then find out how many pennies both items will cost by adding the two amounts.



Note: If the items total more than 10 cents, challenge your student to solve the problem.

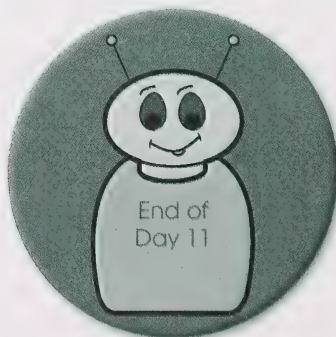
Step 3: Continue to buy two items at a time from the store until all of the items have been bought.



Turn to Mathematics Assignment Booklet 6B, and follow the directions to do Day 11: Assignment 1.

Next, follow the directions to complete Day 11: Assignment 2.

Then complete Day 11: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning. For example, was it easy or hard to trade pennies for nickels and dimes?



Day 12



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- grouping numbers by 10s to 100
- counting numbers by 10s to 100

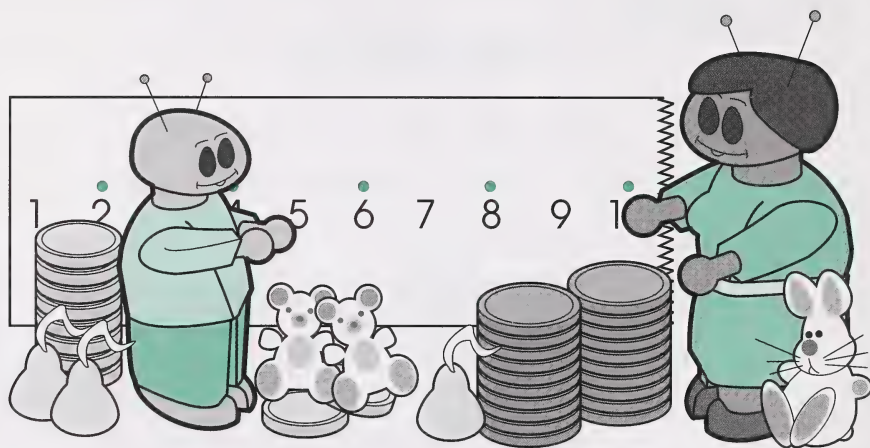


Vocabulary (spoken only)

row

Materials Required

- box of required materials from the master list
- 100 pennies
- ten transparent bags
- ten dimes
- calculator
- several collections of 100 small items (optional)
- the number line, constructed in M6D3 (optional)



Developing the Concept

Activities

Teaching Tip

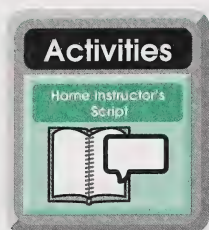


In today's lesson, you will be reviewing grouping and counting numbers by 10 to 100.

Periodic review is an integral part of the learning process. By revisiting and repeating the application of skills and concepts that were learned previously, learning is reinforced and new connections are gained.

Set out the 100 pennies and ten transparent bags.

Direct your student by providing the following instructions.



Count 10 pennies from the pile and place them into a plastic bag.

Finish separating all the pennies into groups of 10 and placing each group into a bag.

How many groups of 10 do you have? (10)

Set all 10 bags in a **row**.

I am going to count by 10s to see how many pennies you have.

I will point to each bag as I count it.

Starting on the left end of the **row**, count the bags.

10 ... 20 ... 30 ... 40 ... 50 ... 60 ... 70 ...
80 ... 90 ... 100

You have 100 pennies.

Now, as I point to each bag, I want you to count by tens with me.

10 ... 20 ... 30 ... 40 ... 50 ... 60 ... 70 ...
80 ... 90 ... 100

I will take some of your penny bags away, and we will count how many bags you have left.

(Take away 2 bags.)

Count with me, but this time you point to each bag as we count it.

10 ... 20 ... 30 ... 40 ... 50 ... 60 ... 70 ...
80

How many pennies do you have?

A few more times, take away various numbers of bags so that the student will have the opportunity to practise counting by tens.

Return all the bags of pennies to the row formation.

Take out the ten dimes, and then continue with the following script.

Set 1 dime in front of each bag.

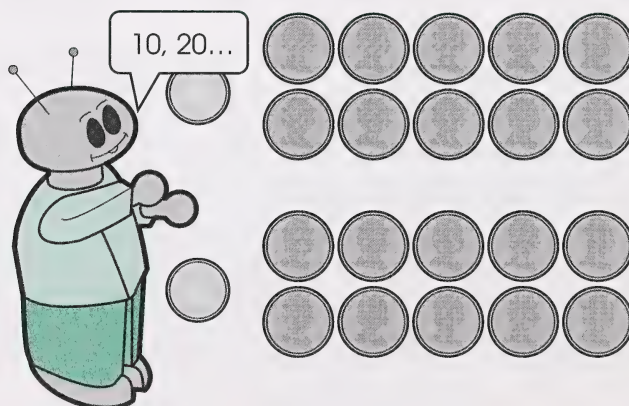
10 pennies have the same value as 1 dime.

Count the dimes by 10s to find out how many cents you have.

Point to each dime as you count it.

I will take some of the bags and dimes away.
(Take away three bags and three dimes. It is important that you take away the same number of bags of pennies and dimes so that the student continues to see the relationship between the 10 pennies and the dime.)

Point to each dime and count by 10s to find out how many cents you have now.



Continue to take away various numbers of bags of pennies and dimes so that your student has the opportunity to practise counting by tens and to see that a dime is equivalent to ten pennies.

Applying the Concept

1. My Counting by Tens Booklet

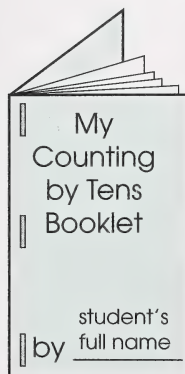
Step 1: Fold one sheet of construction paper and two sheets of blank paper in half. Then place the blank paper between the folded halves of construction paper as shown.



The construction paper will be the front and back cover of the booklet.

Now, staple the pages together along the fold line to create a booklet.

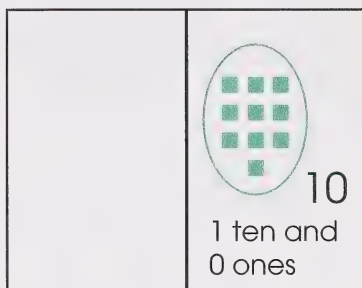
Step 2: On the cover of the booklet, have your student make a cover similar to the following one.



Print the module and day numbers, M6D12, on the back of the booklet.

Step 3: On the first inside page of the booklet, have the student draw a circle.

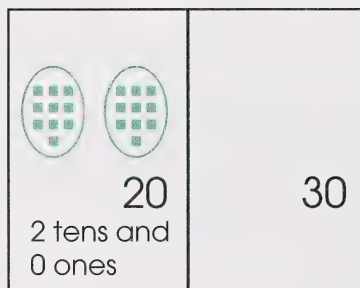
Have your student draw ten illustrations inside the circle.



At the bottom of the page, ask the student to print the number **10** and then **1 ten and 0 ones**.


Step 4: On the second inside page, have your student draw two circles.

Ask the student to draw ten illustrations in each circle.



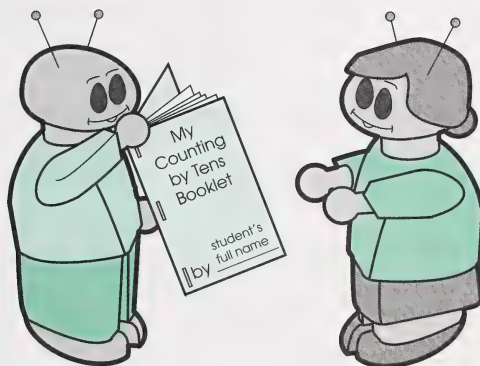
Then at the bottom of the page, have your student print the number **20** and **2 tens and 0 ones**.

Step 5: Complete each consecutive page of the booklet in a similar manner. Only go up to 50.

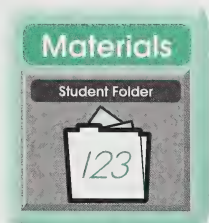
 <p>40</p> <p>4 tens and 0 ones</p>	<p>50</p>
--	-----------

When the booklet has been completed, consider offering some form of praise for care and effort displayed in this activity. For example, draw a star or place a sticker on the pages that show care and effort.

Step 6: Have the student share the booklet with family and friends.



When the booklet is not being shared with others, place it in the Student Folder.



2. Calculator Time

Take out a calculator, and use the following script to guide your student.

Key in the number **10**.

Key in the **+** sign.

Now, key in **10** again.

Key in the **+** symbol.

What does the display say?

Key in **10** and the **+** sign.

What does the display say?

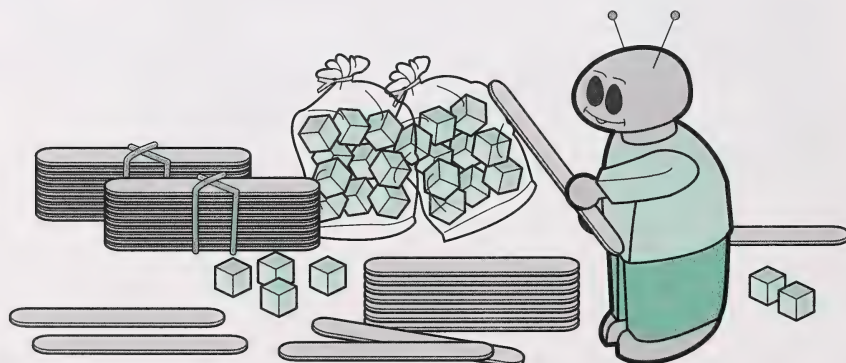


Continue to key in 10 and the + sign, stopping each time the display changes to read the next ten that appears. Stop when the number 100 is reached.

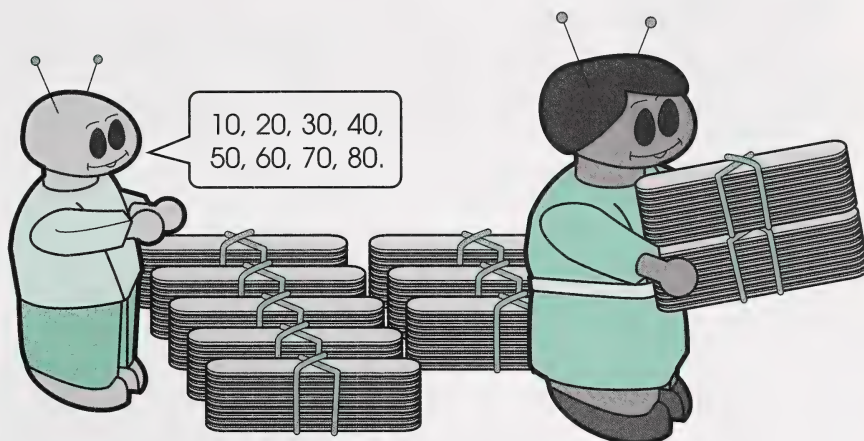
Enrichment (optional)

1. Counting Tens

Step 1: The student will need several collections of 100 small items. Have your student sort each type of item into groups of tens and then count the total number of items.



Step 2: Take away or add various groups of ten to the different collections of items so that your student has the opportunity to continue the counting practice to 100.

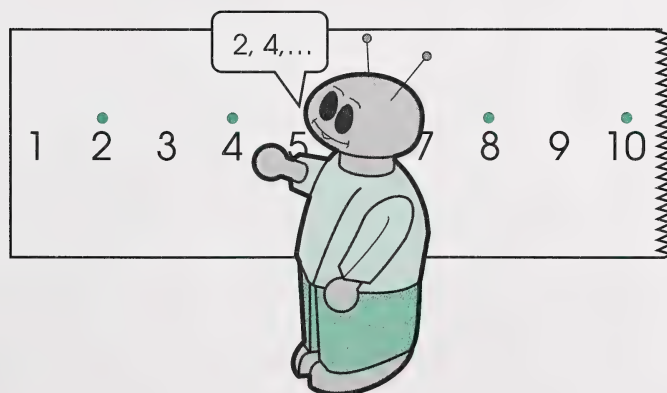


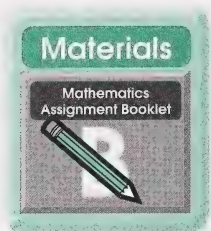
2. Counting on the Number Line

Take out the number line that was made on Day 3.

Take turns counting to 100 by different groupings of numbers, for example, twos, fives, and tens.

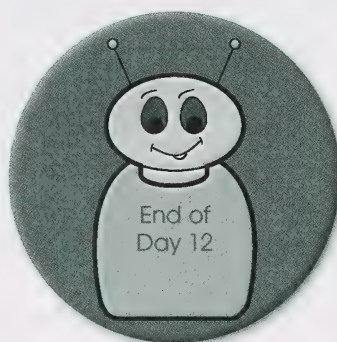
Point to each number as you count it.





Turn to Mathematics Assignment Booklet 6B, and follow the directions to do the assignment for Day 12.

Then complete Day 12: Learning Log. Under Student's Thoughts, ask your student to shade in the face that describes what the student thinks about today's mathematics learning. Next, help your student write an explanation.



Day 13



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- ordering the numbers 0 to 50 from smallest to largest
- grouping 0 to 50 counters and numbers by tens and ones
- using clues to identify numbers on a number line
- exploring the representation of the numbers 0 to 50 using a calculator

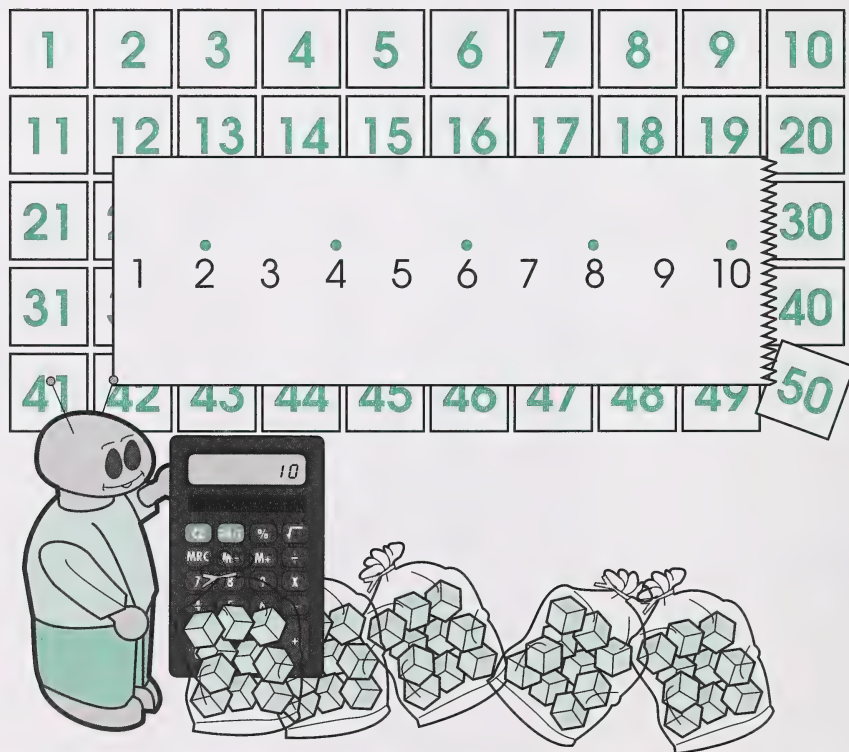


Vocabulary (spoken only)

count forward

Materials Required

- box of required materials from the master list
- 0 to 50 number cards
- 50 counters
- 0 to 20 number line (constructed in M6D8)
- calculator
- 51 to 100 cards (optional) Make the 51 to 100 number cards from halved sections of blank index cards.



Developing the Concept

Activities


























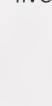
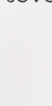
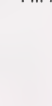














Teaching Tip

Throughout today's lesson, continue to determine your student's understanding of the process of counting.

In counting, the student needs to understand that

- numbers need to be counted in a specific sequence
- only one object is assigned to each number counted (one-to-one correspondence)
- no matter what order objects are counted in, the total number will remain the same
- the last number named is the total amount in the set

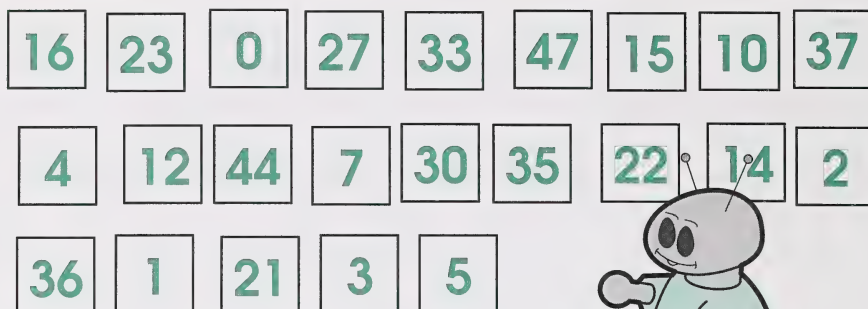
To begin with, you may observe that the student demonstrates one or more of the following counting errors.

	Correct correspondence, incorrect sequence								
objects									
student says	one	two	three	five	nine	ten	seven	twenty	eight
student points									
	Correct sequence, incorrect correspondence (counts too fast)								
									
	one	two	three	four	five	six	seven	eight	nine
									
	Correct sequence, incorrect correspondence (points randomly)								
									
	one		two		three	four			five
									

¹ Robert E. Reys, *Helping Children Learn Mathematics* (New York: John Wiley & Sons, Inc., 1984), 101. Adapted by permission of John Wiley & Sons, Inc.

Day 13 • Mathematics

Randomly place the 0 to 50 number cards in front of your student.



Then ask your student to place the number cards in order from smallest to largest.

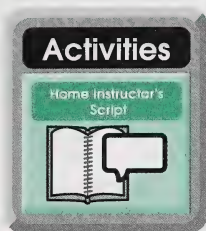
Each time the student starts a new set of ten (for example, 0, 10, 20), instruct the child to begin a new row of cards underneath the previous row.



Once the cards are in order, ask your student to close his or her eyes while you mix up the order of some of the cards.



Then continue with the following script.



As I point to each card, I will read the number that is printed on it.

Tell me if any of the cards are not in the correct order. (Begin with 0 and read through the cards. Stop to fix any cards that are out of order.)

Now that all the cards are in the correct order, let's read the numbers together.

Next, I want you to read the numbers from 0 to 50 by yourself.

Point to each card as you read the number. (Help the child as necessary.)

Make a deck with the 0 to 50 number cards and place it face down in front of the student.

Next, give your student 49 counters and proceed with the following script.

Separate the counters into groups of ten.

How many groups of ten do you have? (4)

How many counters do you have left? (9)

How many counters do you have in all? (49)

Now, from the deck of number cards, turn over the top card.

Show me that number using your counters.

Take turns making each chosen number.

Occasionally make an error to check your student's understanding of a given number.

Activities

teaching tip



Continue to check whether your student accepts the groups of ten being used and counts them by ten rather than counting each item by one.

If your student still prefers to count only by ones, continue manipulative work with grouping and counting tasks until your student develops an understanding that ten objects in a bag makes one ten (many-to-one correspondence.)

For example, when representing the number 19, ten counters in a bag makes one ten. The student can then **count forward** by ones from ten the remaining nine objects until the number 19 is reached.

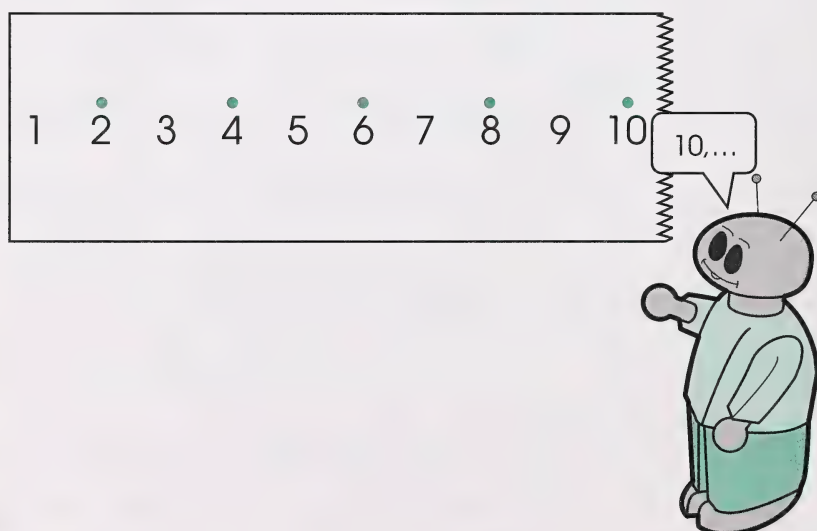
Working with groupings of tens and ones is an essential prerequisite to place-value understanding.

Applying the Concept

What's My Number?

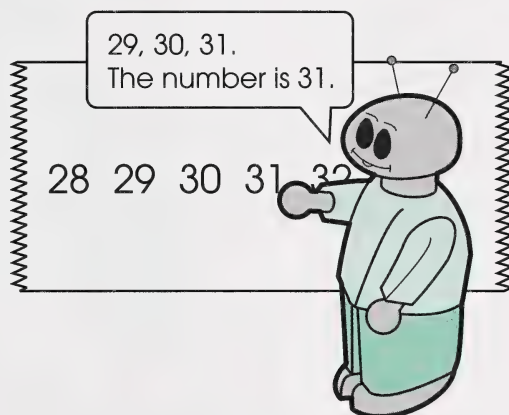
Display the number line that was made on Day 8.

Have the student point to each ten as it is counted.



Next, take turns giving descriptions of numbers and using the number line to identify them. For example, the following types of descriptions could be given:

- My number is 29 and 2 more.
- My number is 4 more than 16.
- My number is 10 less than 37.



If you think your student is ready, you can go on to more challenging examples. For example, “My number is greater than 60. One of the two digits is a seven.”

Calculator Time

With a calculator, use the following script to guide the activity.

Key in the number **0**.

Press the **+** sign.

Key in the number **1**.

Press **+**.

What number is on the display? (1)

Key in **1**.

Press **+**.

What number is on the display now? (2)

Key in 1.

Press +.

Continue to alternate keying in the number 1 and then the + sign until the student reaches 50. Ask the student to tell you each consecutive number as it appears on the display.



Enrichment (optional)

1. Arranging the Numbers

Step 1: For this activity, the student will need the number cards 0 to 100. Make the 51 to 100 number cards from halved blank index cards.

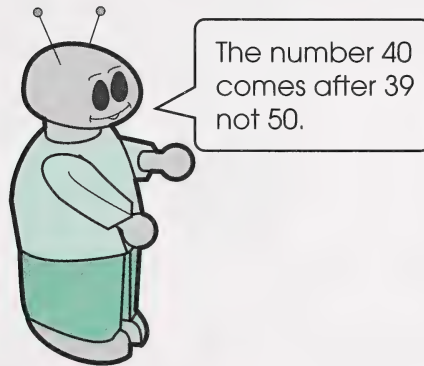
Step 2: Mix up the number cards, and ask your student to order the cards from 0 to 100.

Step 3: Separate the cards into decks of ten (for example, 0 to 9, 10 to 19, 20 to 29, 30 to 39, 40 to 49, and so on).

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
70	71	72	73	74	75	76	77	78	79

Step 4: Mix up one of the decks and then give it to your student to sort the numbers from smallest to largest.

Step 5: Take turns placing the remaining decks of ten numbers in order. Occasionally make a mistake to give your student the opportunity to demonstrate his or her understanding.



2. Finding the Missing Number

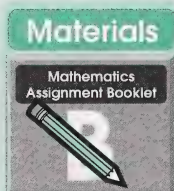
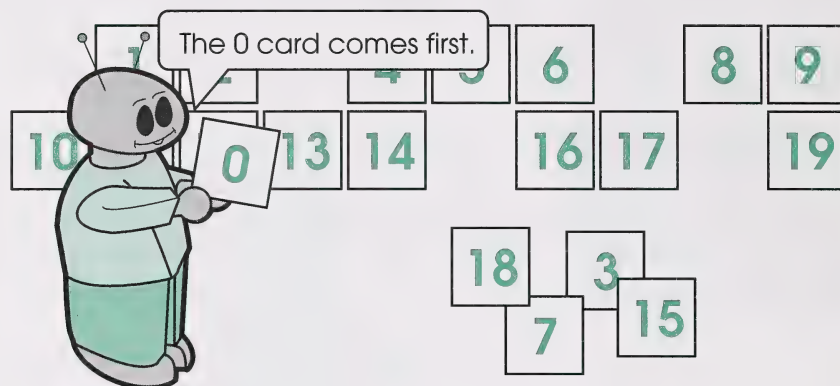
Step 1: Arrange 20 of the 0 to 100 number cards on the table in rows of 10.

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19

Step 2: Randomly remove five cards from the arrangement.

	1	2		4	5	6		8	9
10	11	12	13	14		16	17		19

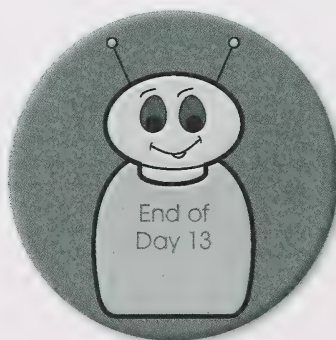
Step 3: Shuffle the cards that you removed from the arrangement, and then give them to your student. Ask the student to put the cards in order.



Turn to Mathematics Assignment Booklet 6B, and follow the directions to do Day 13: Assignment 1.

Next, follow the directions to complete Day 13: Assignment 2.

Then complete Day 13: Learning Log. Under Student's Thoughts, ask your student to shade in the face that describes what the student thinks about today's mathematics learning. Next, help the student write an explanation.



Day 14



Calendar Time

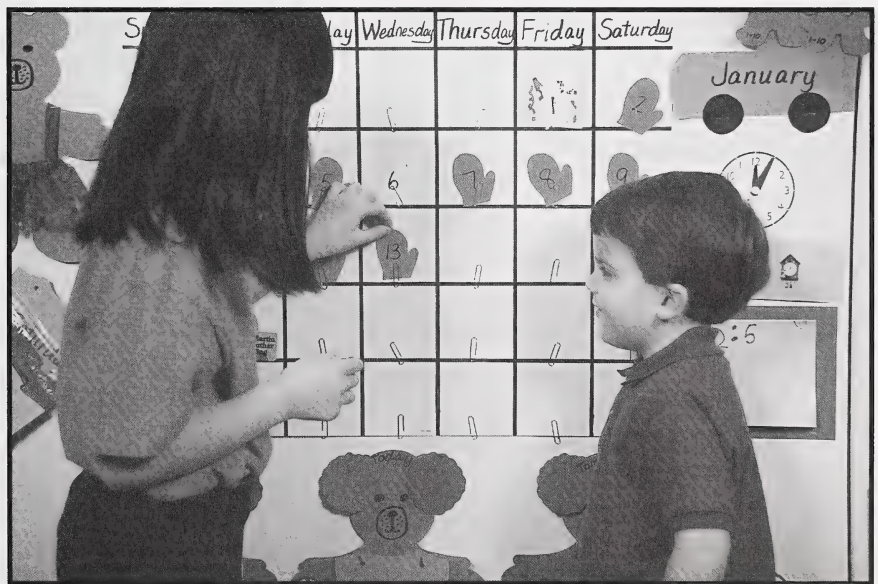
Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- ordering the numbers 0 to 50 from smallest to largest
- counting forward from a given number

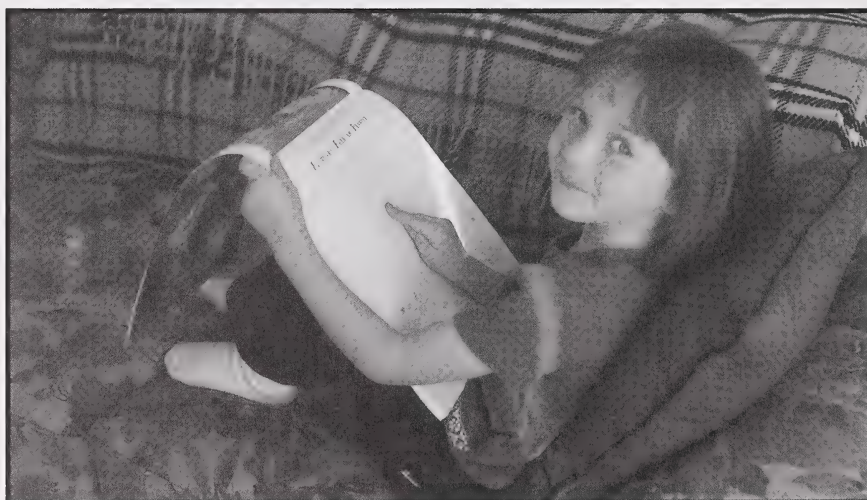
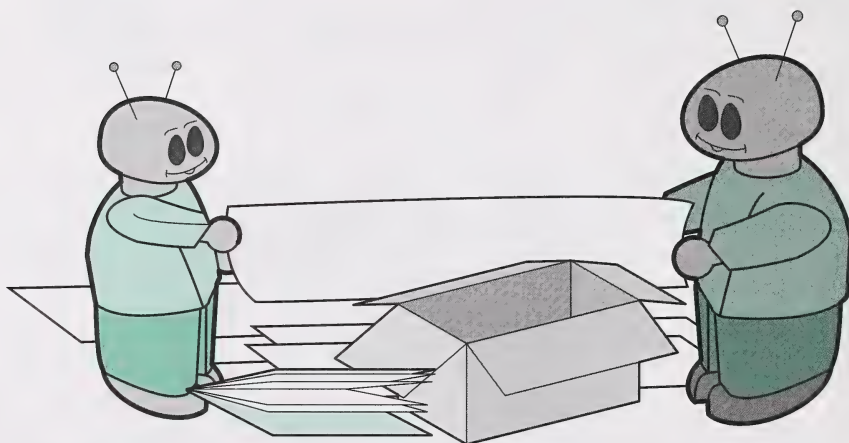


Vocabulary (spoken only)

There is no new vocabulary.

Materials Required

- box of required materials from the master list
- five strips of paper (approximately 1 m by 5 cm)
- old calendars (One calendar is necessary for one of the day's activities—the use of a second calendar is optional.)
- box (optional)
- five strips of paper, approximately 1 m by 5 cm (optional)



Developing the Concept

Activities

Teaching Tip



The ability to count forward means that a student is able to start counting from any given number. **Counting forward** is a **strategy** that develops an indepth understanding of the number system. Students who have difficulty counting forward have been relying on rote counting. A child using rote counting knows some number names, but not necessarily the proper sequence.

Today, your student will be working with calendar pages. During this time, your student will have the opportunity to make real-life applications of what is being learned.

May						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Take the five strips of paper and have your student help you use a ruler to divide each strip into ten equal-sized squares. Each strip should look similar to the one shown below.

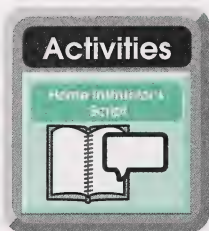
--	--	--	--	--	--	--	--	--	--

In the first square of each strip, print one of the following numbers: 0, 10, 20, 30, and 40.

0									
---	--	--	--	--	--	--	--	--	--

10									
----	--	--	--	--	--	--	--	--	--

Then proceed with the following script:



Take your pencil and the strip that shows 0 in the first square, and fill in the number that comes after 0.

Finish filling in the strip, printing the numbers in the correct order.

What number is in the last square on the strip?
(9)

Now, take the strip that has the number 10 in the first square.

Fill in each of the numbers that come after the number 10.

What number did you print in the last square?
(19)

Read all the numbers on this strip back to me.

Take the strip that begins with the number 20.

Fill in all the numbers that come after the number 20.

Beginning with the number 20, read the numbers on the strip to me.

Continue the activity by helping the student complete the 30 and 40 strips and then having the student read the numbers that are printed on the strips.

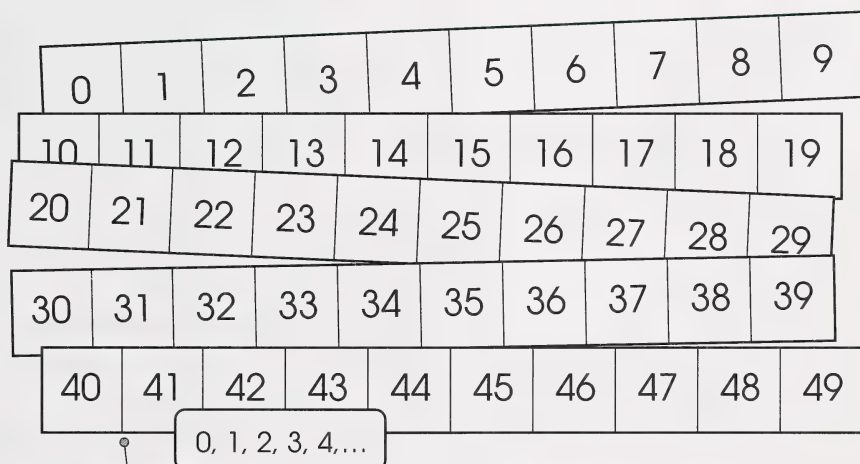
Guide the student with the following script.

I am going to mix up the five strips of paper, and then I want you to place them in the correct order.

What number does the first strip begin with?

What number does the last strip begin with?

Use the strips to count from 0 to 49 for me.



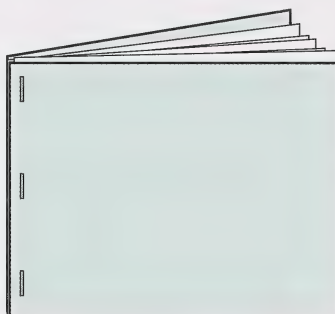
What number comes after 50?

Print the number 50 on one half of a blank index card.

Applying the Concept

My Calendar Booklet

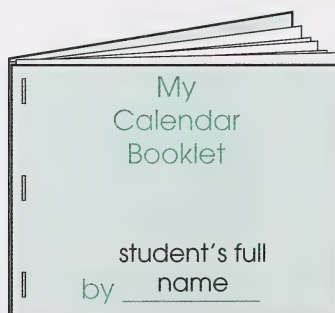
Step 1: Place five blank sheets of paper between two sheets of construction paper. Staple the pages together on the left side to make a booklet similar to the one shown below.



Step 2: On the cover of the booklet, help your student to print the title **My Calendar Booklet**.

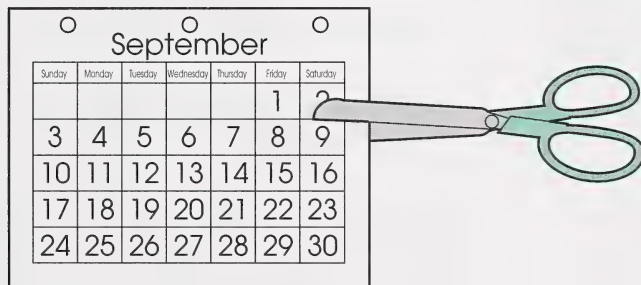
Then have your student print the word **by** and his or her full name.

Illustrations may be added to the cover of the booklet.

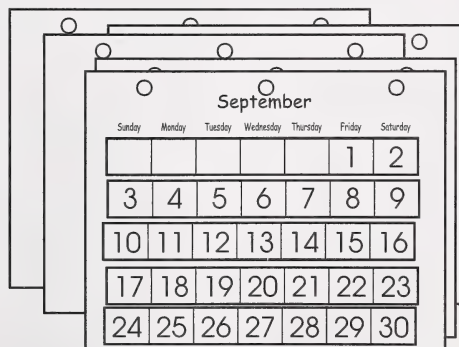


Step 3: In front of the student, place five calendar pages from the old calendar. Using one calendar page at a time, ask the student to do the following:

- Cut the weeks, from Sunday to Saturday, into strips.
- Mix up the strips.
- Sort the strips, and glue them in the correct order onto a blank page of the booklet.
- Label each page with the name of the month and the days of the week.



Step 4: Repeat the process until each blank page has a month cut apart and glued onto it. Be sure the glue has dried on each page before proceeding to the next page.

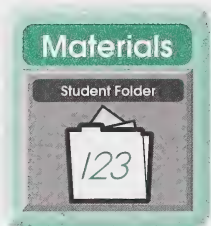


Once the five pages of the booklet have been completed, print the module and day numbers, M6D14, on the back cover of the booklet.

Step 5: Encourage your student to count the days of each calendar month for family and friends.

Have the student use the booklet for activities such as determining what number comes before, after, between; what number is the third Tuesday of the month; and so on.

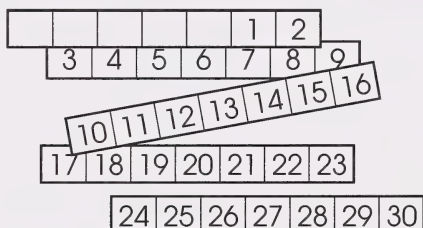
When the booklet is not being shared with others, place it in the Student Folder.



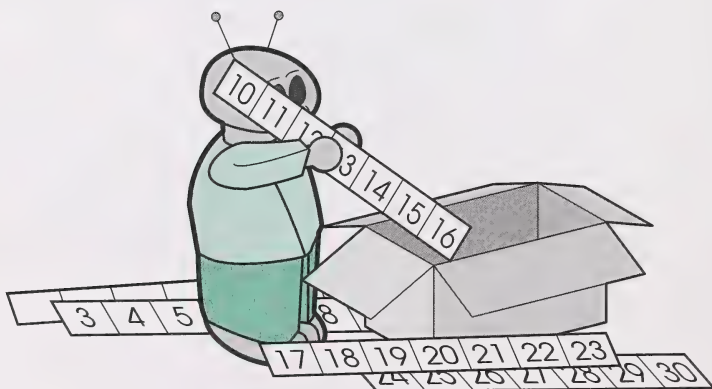
Enrichment (optional)

1. Sorting Calendar Pages

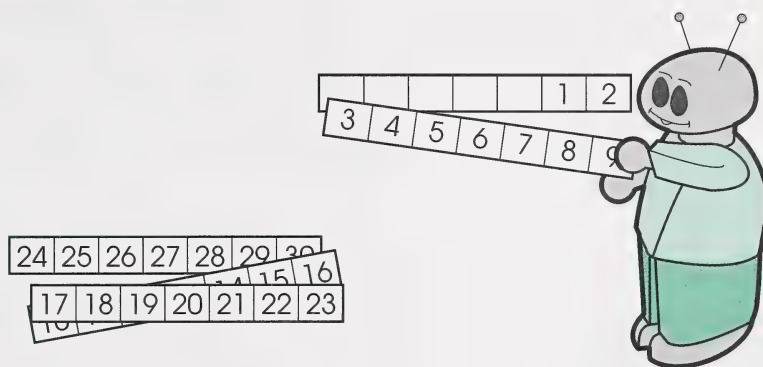
Step 1: From old calendars, cut apart several months into number strips from Sunday to Saturday.



Step 2: Place the strips into a box.



Step 3: Have the student sort the strips into months. Then ask the student to place the strips in the correct number order. Each month becomes a different puzzle to put together.



Step 4: Once these strips are placed in the correct order, the student can use them to practise counting.

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

2. Number Strips

Step 1: Help the student use the ruler to divide several long strips of paper into ten squares each.

--	--	--	--	--	--	--	--	--	--

Step 2: On each strip, print two or three numbers to give the student a hint as to which numbers belong on that strip. One strip might look like the following.

10					15				
----	--	--	--	--	----	--	--	--	--

Step 3: Ask the student to fill in the missing numbers on each strip of paper.

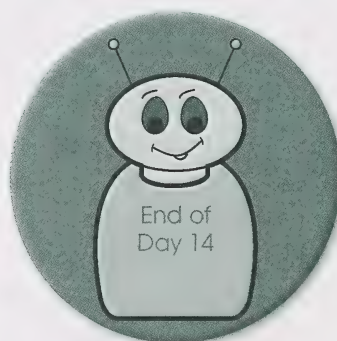
Materials

Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6B, and follow the directions to do the assignment for Day 14.

Then complete Day 14: Learning Log. Under Student's Thoughts, ask your student to shade in the face that describes what the student thinks about this day's mathematics learning. Next, help your student write an explanation.



Day 15



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- identifying tens and ones to 50
- exploring the representation of the numbers 0 to 50 using a calculator
- counting forward from a given number

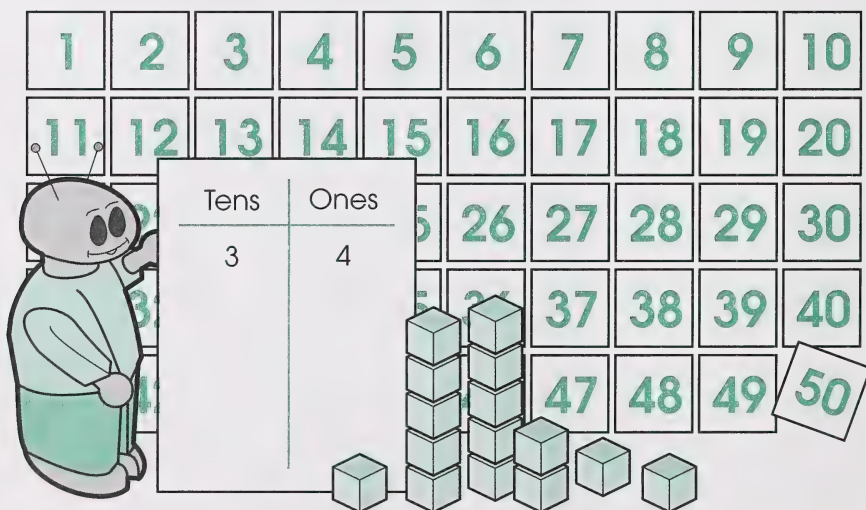
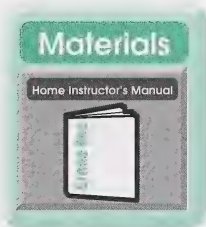


Vocabulary (spoken only)

There is no new vocabulary.

Materials Required

- box of required materials from the master list
- 50 counters, for example, interlocking cubes, wooden craft sticks, or buttons
- place-value mat
- a die with the dots from one to six
- 1 to 50 number cards
- bingo chips or another suitable substitute
- Hundred Chart, found in the Appendix of the Home Instructor's Manual
- calculator
- 59 counters (optional)
- a box of 100 paper clips (optional)



Developing the Concept

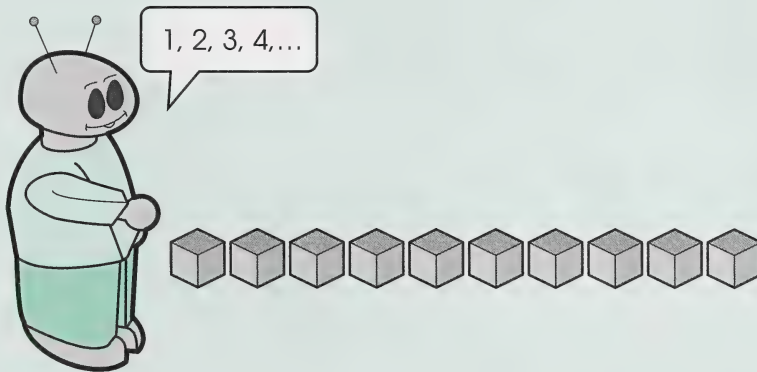
Activities

teaching tip

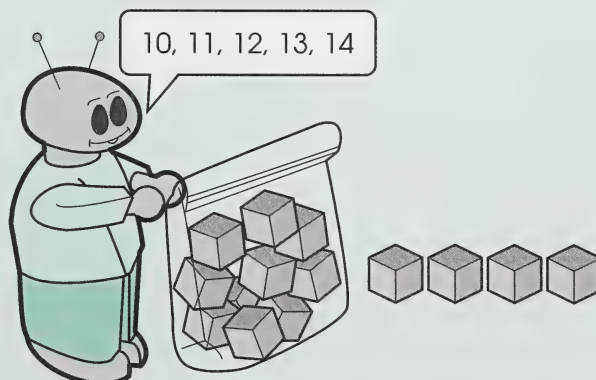


Your student is demonstrating a good understanding of **place value** if he or she recognizes groups of ten without difficulty and can **count forward** to 100 from a given number.

If your student shows a preference for counting each individual object in a set rather than accepting a group of ten objects, despite having personally made the group, more time will need to be spent with place-value concepts.



A student who begins counting at one and counts through to 14 is still thinking and working in the stage of **one-to-one correspondence**. A student who has moved to the stage of **many-to-one correspondence** will confidently accept the ten and count forward by ones to 14.



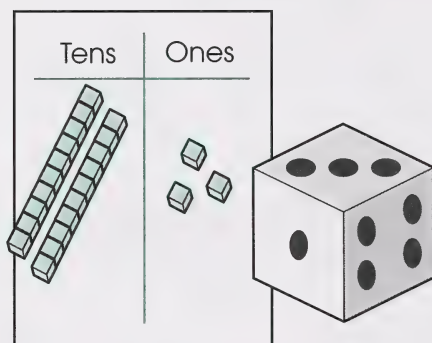
Roll and Trade

Take turns rolling a die and adding that number of counters to the ones column of the place-value mat.

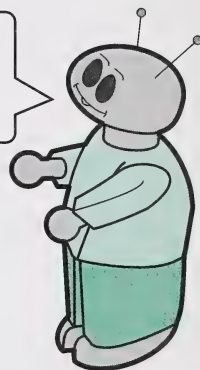
Keep rolling the die and adding that many counters to the ones column until there are ten or more.

Each set of ten is then grouped together and moved over to the tens column.

After each addition situation, the player who rolled the die states the total number of counters on the mat. There are 23 counters on the mat.



There are
23 counters
on the mat.

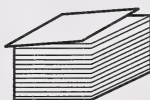


Continue this activity until your student has had the opportunity to practise grouping by tens and ones and counting forward to 50.

Applying the Concept

1. Lucky Number

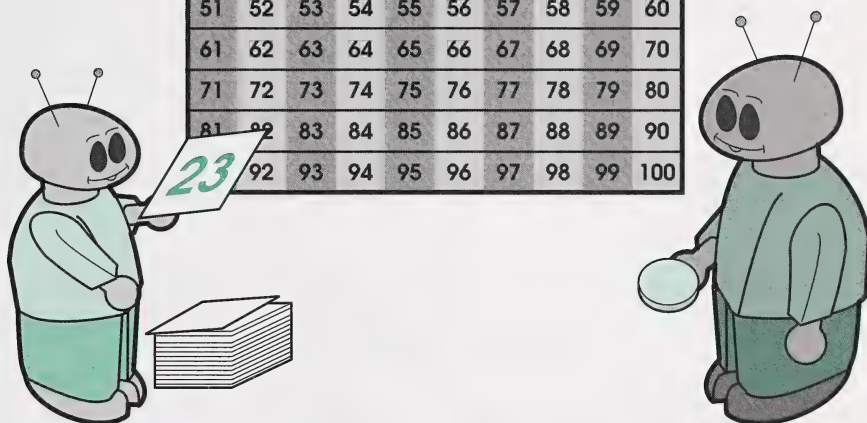
Step 1: Place the deck of 1 to 50 number cards face down.



Step 2: Take turns choosing a number card without showing it to the other player.

Hundred Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Step 3: The other player tries to guess the number by asking questions such as “Does your number have five tens?”

After each question, the “guesser” uses counters to cover up numbers on the Hundred Chart that have been excluded.

Step 4: Continue until the student has had time to guess several numbers or until the student gets tired.

2. Calculator Time

Exploring the Calculator

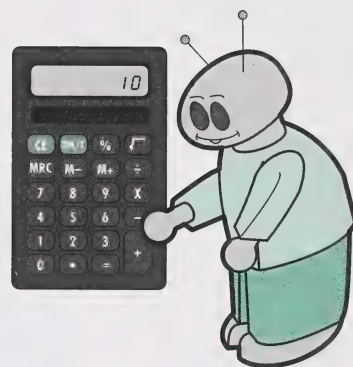
Give the student the opportunity to explore the calculator—finding keys, trying them out, and experimenting with different keying sequences.

Counting by Ones with a Calculator

One player specifies a starting number and an end number (both less than 50).

The other player keys in a sequence to make the calculator count by ones from the starting number to the end number.

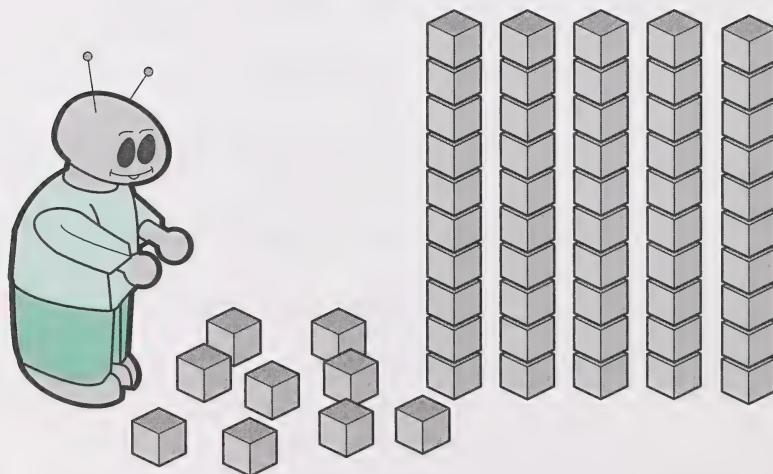
For example, if the starting number is 12 and the end number is 24, the sequence would be $12+1+1$, continuing until the number 24 is reached.



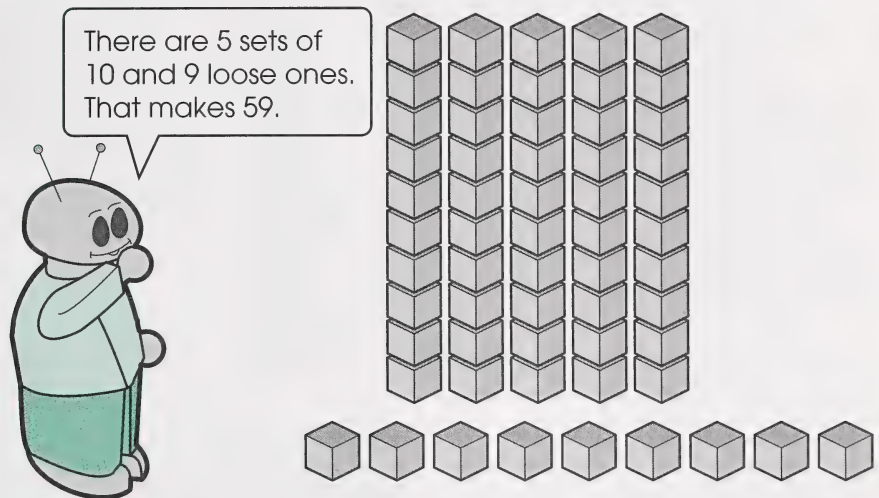
Enrichment (optional)

1. Sorting Numbers

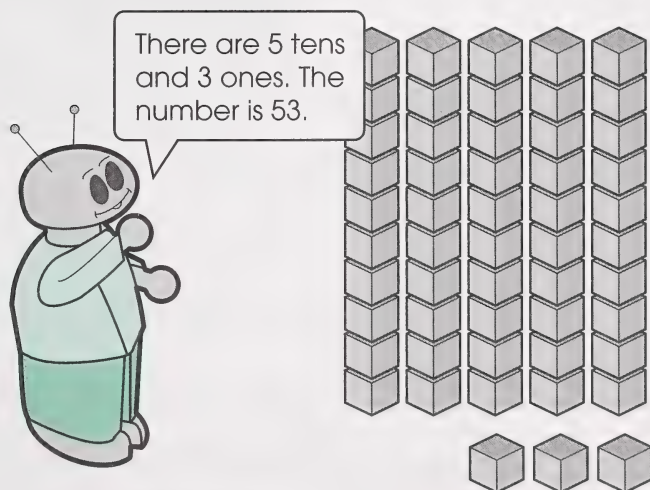
Step 1: Give 59 counters to your student, and ask him or her to sort them into groups of tens and ones.



Step 2: Ask the student how many tens and ones there are and how many objects there are in total.

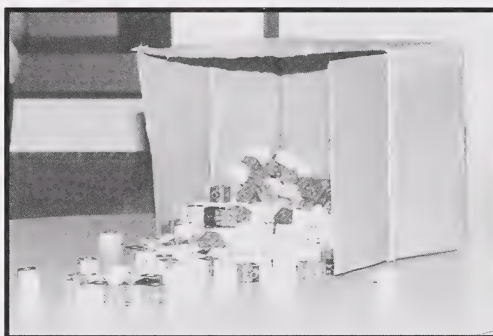
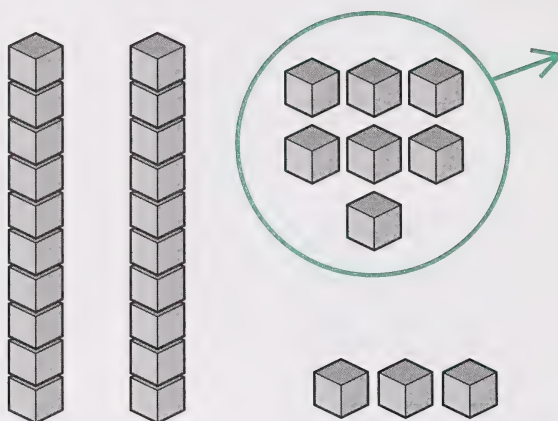


Step 3: Take away or add some objects, and ask your student to re-sort them into groups of tens and ones.



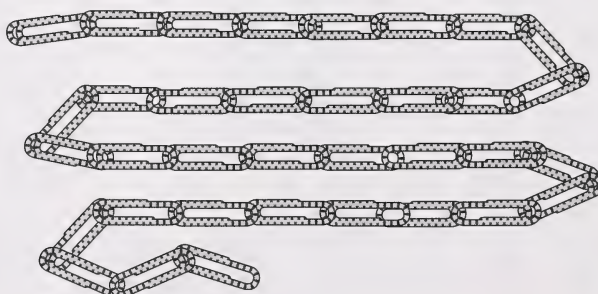
Always ask for the number of tens and ones and the total number of objects. For example, if the number is 53, you would want the student to say that there are 5 tens and 3 ones and then say that the number is 53.

Step 4: Continue to practise adding or taking away objects.

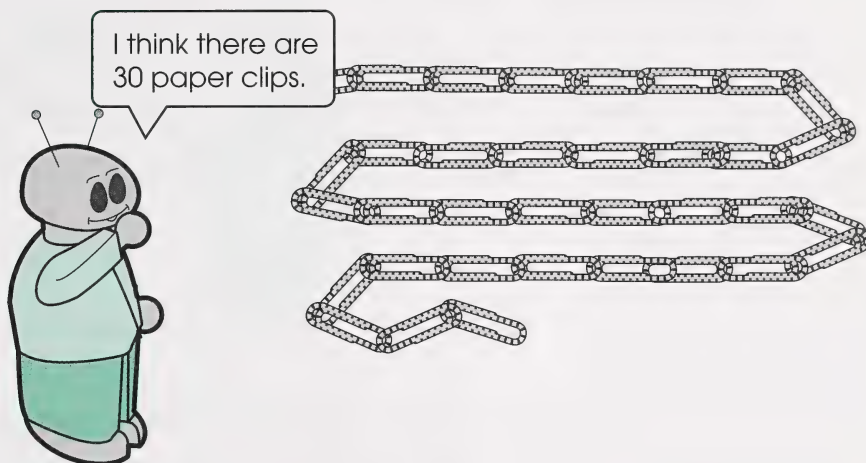


2. Paper-Clip Train

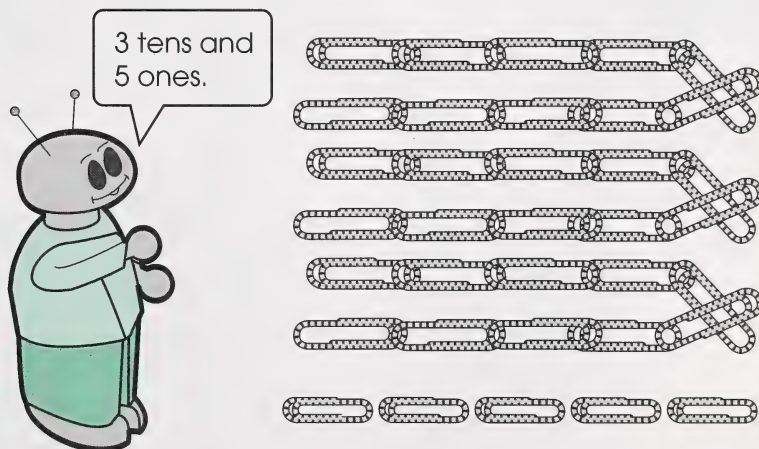
Step 1: Join together 35 paper clips into a train.



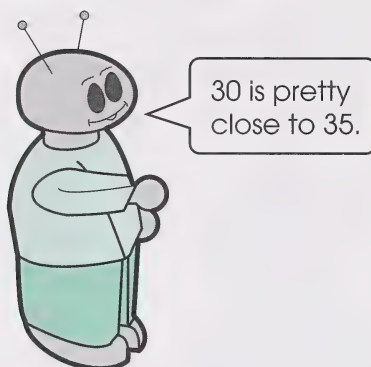
Step 2: Ask the student to estimate how many paper clips are in the train. Print the estimated amount on a piece of paper.



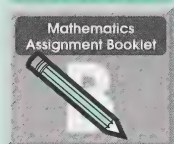
Step 3: Have the student determine the actual amount by breaking the train into sections that are ten paper clips long. Leave the remaining paper clips as a separate train.



Ask the student to compare the estimate with the actual amount.



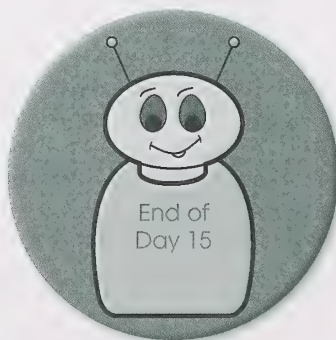
Materials



Turn to Mathematics Assignment Booklet 6B, and follow the directions to do Day 15: Assignment 1.

Next, follow the directions to complete Day 15: Assignment 2.

Then complete Day 15: Learning Log. Under Student's Thoughts, print a sentence or two telling one thing the student found difficult and one thing the student found easy.



Day 16



Calendar Time

Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- showing different ways of making the number 10
- identifying place value in a variety of ways
- stating the value, in cents, of pennies, nickels, and dimes
- using pennies, nickels, and dimes to make amounts to 10

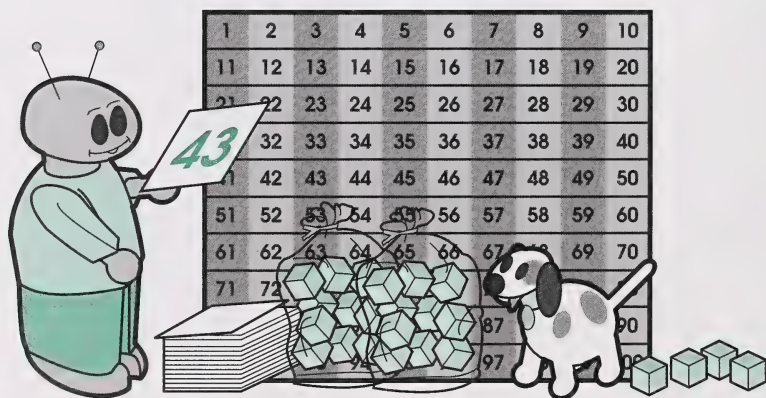
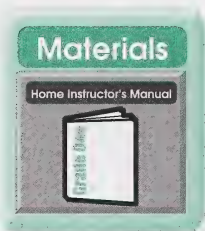


Vocabulary (spoken only)

There is no new vocabulary.

Materials Required

- box of required materials from the master list
- collections of 100 counters, for example, interlocking cubes, wooden craft sticks, or buttons
- five groups of ten counters in bags or bundles and nine loose counters (Counters can be taken from the collection of 100 counters.)
- place-value mat
- 0 to 50 number cards
- Hundred Chart, found in the Appendix of the Home Instructor's Manual
- 100 pennies, 20 nickels, and 10 dimes
- five beanbags (optional)
- plastic bottles (optional)
- canning rings, plastic bracelets, or rings from stacking toys (optional)



Developing the Concept

Activities

Teaching Tip



Throughout the Grade One course, hands-on experiences with **manipulative models** are emphasized. These experiences are essential in establishing and developing your student's understanding of mathematics.

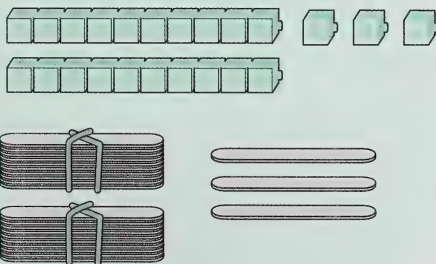
Children need to be exposed to a variety of different types of models as well (for example, interlocking cubes, sticks, buttons, wooden craft sticks, or beans), so that they develop a level of understanding that does not depend upon any one physical model. They learn that the concept can be applied to all models.



Children also need to be given ample time to develop a familiarity with the models, so that they can make connections between the models and the concepts being taught.

When the student is able to solve problems with **proportional** models, **non-proportional** models are introduced. If the student is able to develop a solution with proportional models and transfer that development to non-proportional models, he or she likely has a good understanding of the concept of place value.

Proportional Models



Non-proportional Models



During today's lesson, you will be assessing your student's ability to perform six different activities. Activities 1 to 5 will work with proportional models, and Activity 6 will work with non-proportional models.

Activity 1

Place collections of 100 counters in front of the student.

Then guide your student as follows.



Show me 10 counters.



How do you know there are 10? (Accept any reasonable answer.)

Now, show me the number 10 another way.
(Guide the student as necessary.)



Challenge your student to see how many different ways he or she can make the number ten. Listed below are several possibilities.

- Count another collection of counters by ones.
- Change the original set of ten counters to six red counters and four white counters.
- Group the same counters into five sets of two, three sets of three with one left over, two sets of five, and so on.

The way in which the student determines the set of ten will help you recognize how well he or she understands subsets for ten.

Activity 2

You will be assessing your student's ability to match a place-value model of tens and ones to a verbal number name.

In front of your student, place four groups of ten counters, nine loose counters, and the place-value mat.

Separate four groups of tens and nine ones, and then continue with the following script.

Estimate how many counters there are.

Record your estimate on a piece of paper.

Count the number of counters.



While the student is determining the actual number of counters, observe how he or she organizes the materials. For example, does the student count by tens first and then count forward by ones? Are the counting patterns understood as well?

At this time, the student is only required to show place value to 50.

How many counters are there? (49)

Record your number on the place-value mat.

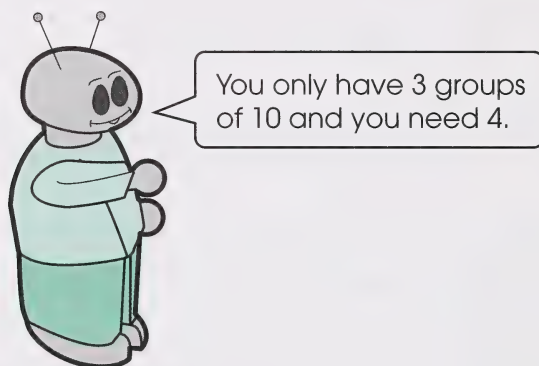
Tens	Ones
<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>
4	9

How close was your estimate to the count?

Take turns determining the actual number of counters for approximately five minutes. Show each number on the place-value mat with counters and with numbers.

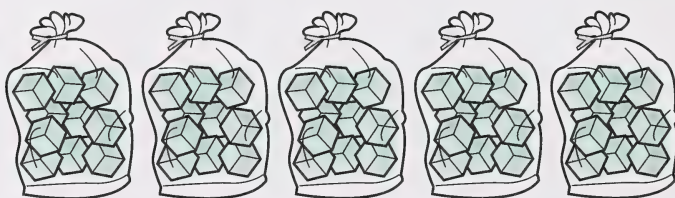
Monitor one another's counting.

Occasionally make an error to check for understanding.



Activity 3

Next, give the student five bags with ten objects in each bag, nine loose objects and the 0 to 50 number cards.



Shuffle the 0 to 50 number cards and place them face down in a pile.

Turn the top card face up, and say the number.

Then continue with the following script.

Use the counters to show me this number.

Activities

Teaching Tip



Observe to see if your student counts out bags of ten and then adds on the remaining ones. Are your student's procedures organized or random?

Take turns choosing a card and using the counters to show a given number. Practise for approximately five minutes.



Monitor one another's construction of a given number.

Occasionally make an error to check for understanding.

Activity 4

Using the Hundred Chart, ask your student to match a verbal number name to a number.

You may use the following script to guide this activity.

Show me the number 38 on the Hundred Chart.

How did you find the number?

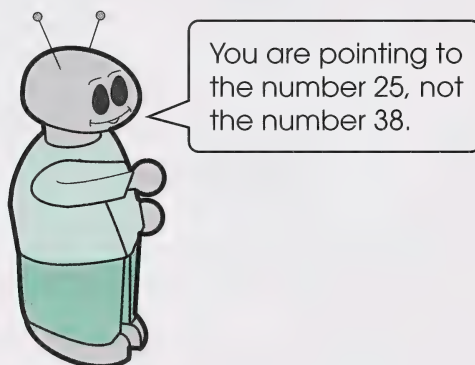


Monitor to see if your student uses counting patterns to find the number on the chart or searches at random.

Take turns pointing to a given number from 11 to 50. Practise for approximately five minutes.

Monitor and discuss each other's findings of a given number.

Occasionally make an error to check for understanding.



Activity 5

Now, using the collection of counters, the 0 to 10 number cards, and the Hundred Chart, match a concrete model to a number.

Show three groups of ten counters and six ones, and then say the following script.

What number is this? (36)

Use the 0 to 10 number cards to make this number.

Show me this number on the Hundred Chart.



Observe to see if your student

- counts by tens and ones
- counts forward and backward
- uses the Hundred Chart as an aid

Take turns matching a proportional model to a number.

Practise this activity for approximately five minutes.

Monitor and discuss one another's progress.

Occasionally make an error to check for understanding.



You have only shown 2 groups of tens.
You need to show 3 groups of tens.

Applying the Concept

Activity 6

In this activity, your student will be working with proportional and non-proportional models. You could check the Teaching Tip at the beginning of this day's activities to review the meaning of proportional and non-proportional models.

Activities

Teaching Tip



While involved in this activity, observe to see whether your student can

- recognize the value of a penny, nickel, and dime
- create equivalent sets of coins up to ten cents in value
- use pennies, nickels, and dimes to make amounts to 100

Place in front of your student 100 pennies, 20 nickels, and 10 dimes.

Briefly spend some time discussing the special features of each coin and why money is used in our society.



Show the student one of the pennies, and then continue as follows.

What is the name of this coin? (penny)

What is the value of a penny? (one cent)

Place the 100 pennies in front of the student and say the following.

Count the pennies.

How many are there? (100)

What is the value of 100 pennies? (100 cents)

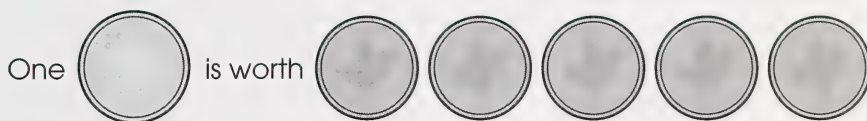
Show the student a nickel and continue with the following discussion.

What coin is this? (nickel)

How many pennies is this nickel worth? (5)

Beside the nickel, place 5 pennies.

1 nickel equals 5 pennies.



Place the 20 nickels in front of the student and say the following script.

Estimate how many nickels are here.

Record your estimate.

Now, count the nickels.

How many are there? (20)

How close was your estimate to the actual number?

What is the value of a nickel? (5 cents)

Let's count the nickels to see how much 20 nickels are worth.

As I slide each nickel away from the others, we will count by 5s.

Each nickel equals 5 cents; so as I move each nickel, we will count by 5s to find the total.

How much are the 20 nickels worth?
(100 cents)

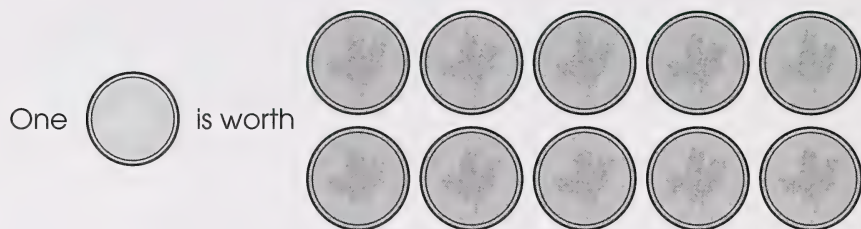
What else did you count that was also worth 100 cents? (100 pennies)

Show the student a dime and continue with the following discussion.

What coin is this? (dime)

What is the value of this dime? (10 cents)

1 dime has the same value as 10 pennies.



Place ten dimes in front of the student and continue with the following script.

Estimate how many dimes are in front of you.

Record your estimate.

Now, let's count the dimes.

How many are there? (10)

How close was your estimate to the actual number?

How much is a dime worth? (10 cents)

Each dime equals 10 cents; so as I slide each dime away from the others, we will count by 10s to find the total.

How much are the 10 dimes worth?
(100 cents)

Were the 100 pennies also worth 100 cents?
(yes)

Were the 20 nickels worth 100 cents? (yes)

Place two nickels in front of the student, and then continue with the following script.

In front of you, I have placed two nickels.

Show the same amount in different ways.

(Encourage the student to show one dime, one nickel and five pennies, and ten pennies.)

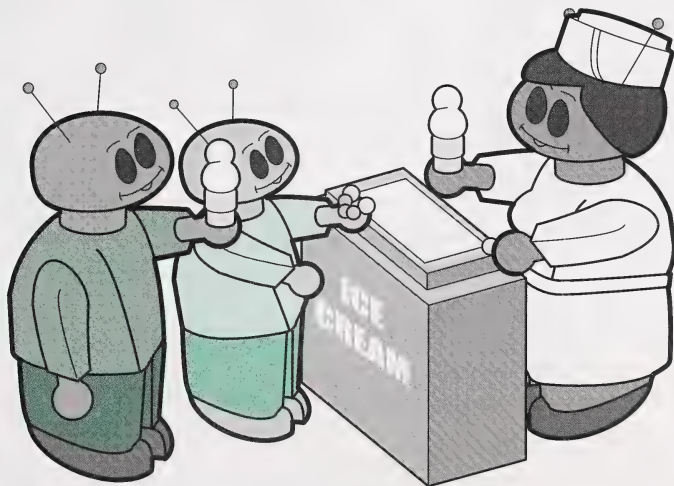
Which way used the least number of coins?
(one dime)

Enrichment (optional)

1. Paying for Things

Whenever you and your student are in a store, help him or her to pay for items.

Talk about the cost of the item, the money used to pay for the item, and the change given.



2. Books About Numbers to 99

Blumenthal, Nancy. *Count-a-Saurus*. 1989.

De Regniers, Beatrice. *So Many Cats*. 1985.

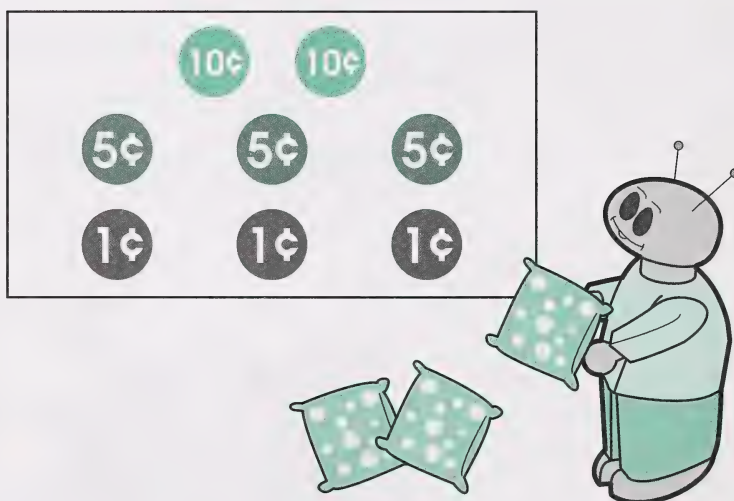
Feelings, Muriel. *Moja Means One*. 1971.

Fisher, Leonard Everett. *Number Art: Thirteen 123s from Around the World*. 1982.

LeSieg, Theodore. *Wacky Wednesday*. 1974.

3. Beanbag Toss

Step 1: Make a target similar to the one shown below.



Step 2: Gather 100 pennies, 20 nickels, and 10 dimes.

Step 3: Have your student toss five beanbags at a target similar to the one shown above.

Step 4: Collect the appropriate coins after each toss and count and record the scores.

4. Ring Toss

Step 1: Gather the following materials:

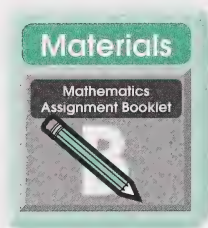
- labelled plastic bottles similar to the ones shown below
- canning rings, plastic bracelets, or rings from a stacking toy
- 100 pennies, 20 nickels, and 10 dimes



Step 2: Have your student throw three rings at the set of bottles and try to get the rings around the bottles.

Step 3: Next, ask the student to collect coins to match each bottle he or she got a ring around and then count the coins to find a score.

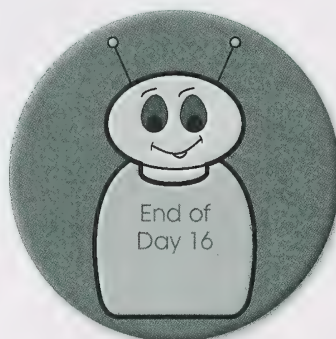
Once the day's activities have been completed, consider taking your child for ice cream or for a different treat of your choosing. Help your student use pennies, nickels, and dimes to pay for the treat.



Turn to Mathematics Assignment Booklet 6B, and follow the directions to do Day 16: Assignment 1.

Next, follow the directions to complete Day 16: Assignments 2, 3, and 4.

Then complete Day 16: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about today's mathematics learning. For example, was it easy or hard to find a given number on the Hundred Chart?



Day 17



Calendar Time

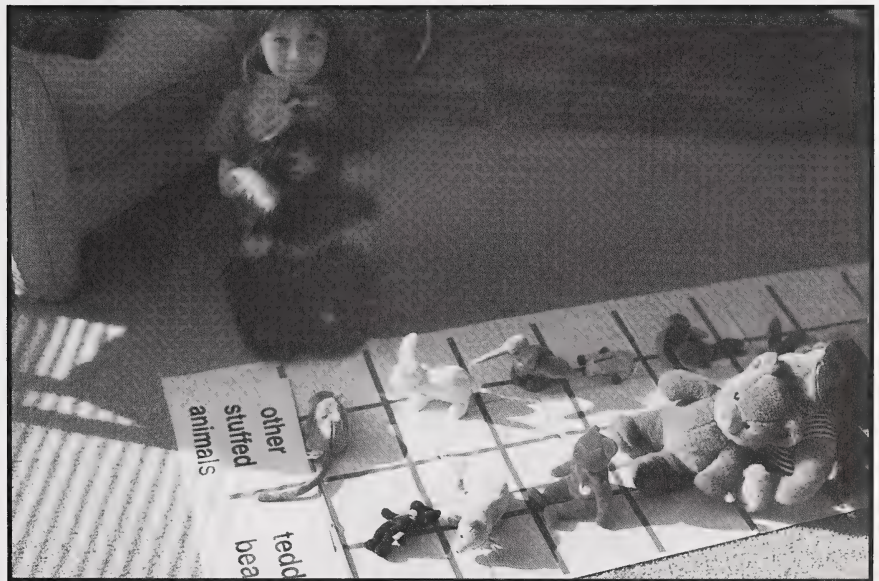
Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- collect first-hand information by conducting a survey
- construct a concrete graph and a picture graph using one-to-one correspondence
- compare data, using appropriate language, including quantitative terms such as **how many more**



Vocabulary (spoken only)

data management

graph

concrete stage

picture stage

abstract stage

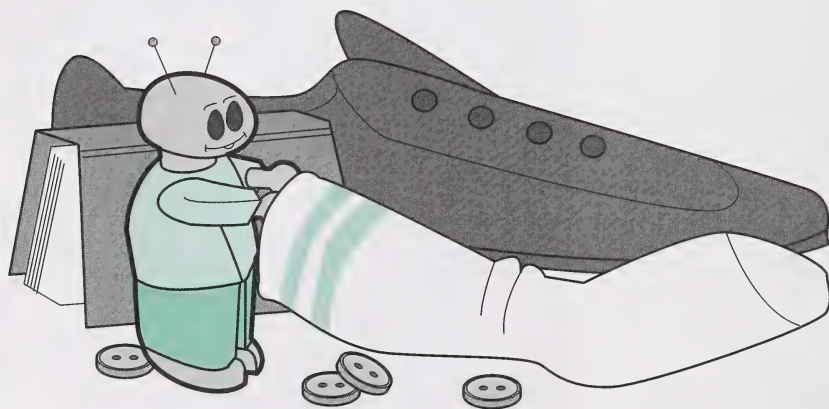
concrete graph

picture graph

pictorial

Materials Required

- box of required materials from the master list
- 20 different buttons or another suitable substitute
- 10 different pairs of socks, white and coloured, or other suitable substitutes (optional)
- 10 pairs of shoes (optional)
- 20 books (optional)



Developing the Concept

During the next two days, you and your student will focus on data management. **Data management** is most commonly associated with the use of **graphs**.

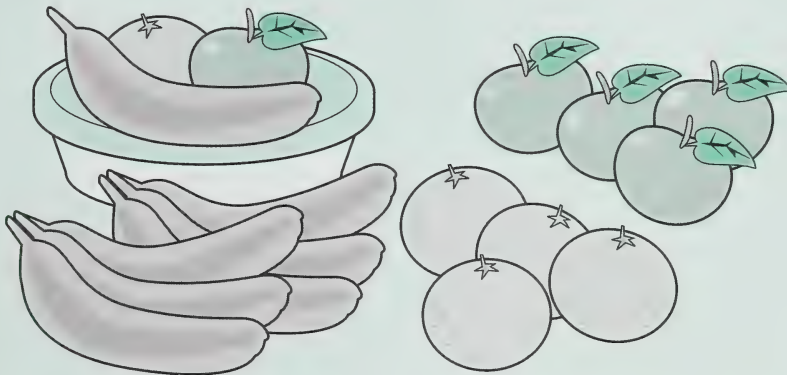


Graphing skills include constructing and reading graphs, as well as interpreting graphical information.

There are several developmental stages that a child progresses through when learning how to graph information. These stages are described below.

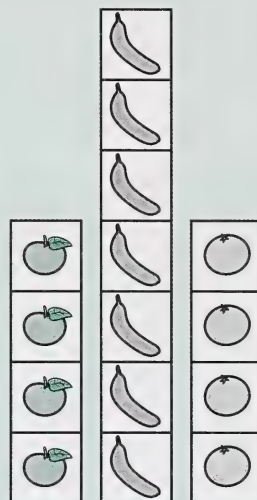
- **Concrete Stage:** The student works with manipulative materials, and each item represents one thing.

For example, each of several participants is asked to choose one favourite piece of fruit. Then each piece of fruit is positioned on the table to represent the participants' preferences, as shown below.



Continued . . .

- Pictorial Stage:** The student uses **pictorial** representation of the concrete materials that are being graphed. A one-to-one correspondence is maintained between each object and its pictorial representation. Based on the previous example, you would ask each student to draw an illustration of his or her favourite fruit on an index card in order to build a **picture graph** similar to the one shown on the right.



- Abstract Stage:** During this stage, the student now makes the transition to using rectangular bars and coloured squares to represent the data.

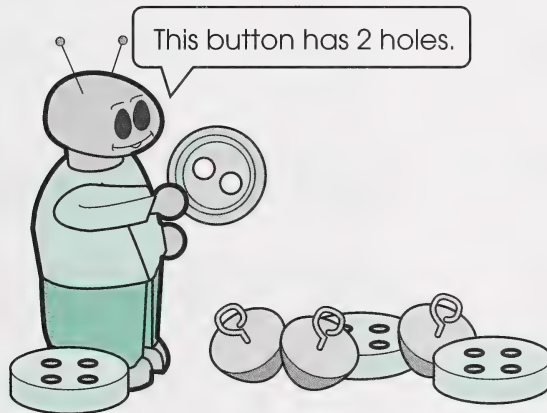
If your student collects the data used to make a graph, this contributes to his or her ownership and interest, as well as to the reality of the experience.



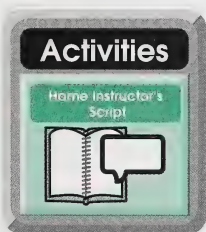
Concrete Graph

Set out approximately 20 buttons or another type of counter and talk about different ways of sorting the items.

Challenge your student to think of as many ways as possible. For example, if buttons are used, the student could choose to sort by different numbers of holes, flat surfaces and raised surfaces, different shapes and sizes, different textures, and so on.



You may need to alter the following script to accommodate the types of buttons that you have.



Let's sort these buttons according to how many holes they have.

Make a pile of buttons with the hole on the back.



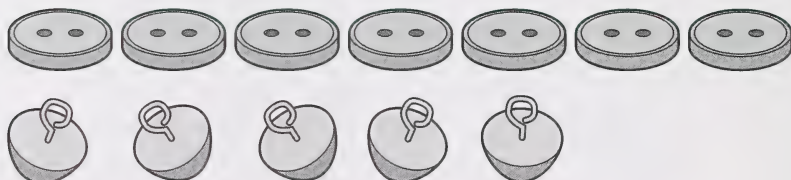
Make a pile of buttons with two holes in the middle.

Make a pile of buttons with more than two holes.

Now, arrange the buttons with a hole in the back in a row.



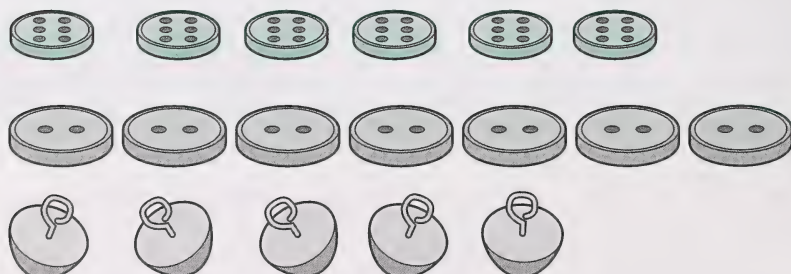
Place the buttons with 2 holes in a row beside these buttons.



Now, arrange the buttons with more than 2 holes in a row beside the 2-hole buttons.



Check to make sure that all your rows start at the same place and that the buttons are lined up across the rows as shown in the following illustration.



Which kind of buttons do you have the most of?

Which kind of buttons do you have the least of?

Applying the Concept

Picture Graph

Take out a blank sheet of paper and pencil. Then continue with the following instructions.

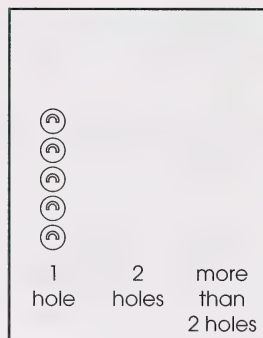
Now, we are going to draw this **graph** on a piece of paper.

At the bottom of the paper, I want you to print **1 hole**, **2 holes**, and **more than 2 holes**.



Count how many buttons you have with one hole.

Above where you printed **1 hole** on the paper, I want you to draw the same number of matching buttons that were shown on the first **graph** you made.



Count how many buttons you have with 2 holes.

Draw the same number of buttons above where you printed **2 holes**.

Count how many buttons you have with more than 2 holes.

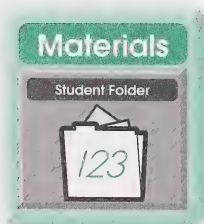
Draw the same number of buttons above where you printed **more than 2 holes**.

You have made a **picture graph**.

Count how many pictures of buttons you have drawn.

Do you have the same number of buttons on the table? (Yes)

What information does this **picture graph** tell you? (Briefly spend some time discussing what information can be obtained from the graph.)



On the back of the picture graph, print all the necessary submission information. Then place it in the Student Folder.

Enrichment (optional)

1. Sock, Socks, and More Socks

Concrete Graph

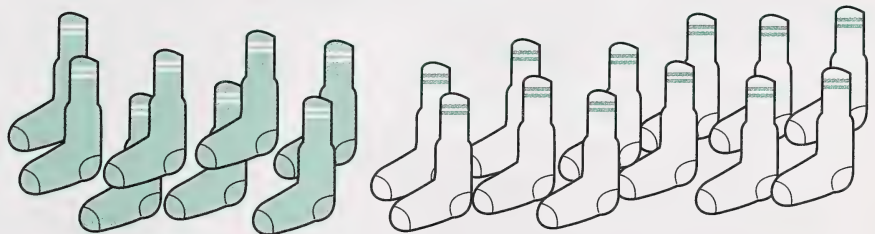
Help the student gather 10 pairs of socks. Some of the socks need to be coloured, and others need to be white. You may substitute other groupings according to the type of items that you have available.

Then discuss the following questions with the student.

How are these socks different from one another? (Challenge your student to think of as many different attributes as possible (for example, different colours, sizes, materials, designs, types, and so on).

We are going to sort these socks according to whether they are white or coloured.

I want you to place all the white socks in one pile and all the coloured socks in a separate pile.

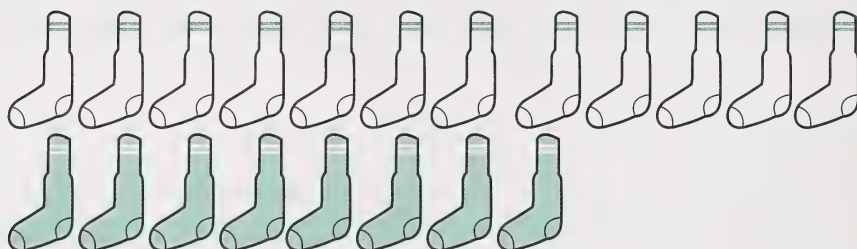


Allow the student time to sort all 10 pairs of socks into the two piles. Monitor and help as necessary.

Continue by saying the following.

Arrange all the pairs of white socks in a row.

Now, start at one end of the white row of socks and place one coloured sock directly underneath each white sock.



If necessary, help your student in the alignment of the socks so the one-to-one correspondence is evident.

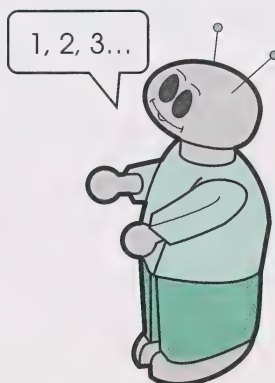
Next, proceed with the following questions.

Which row is longer—the white row or the coloured row?

Which row has more socks?

Which row has fewer socks?

Count how many socks there are in each row to check if you are correct.



Choose a different characteristic, for example, size or usage, and repeat this activity.



2. Shoe Sort

Step 1: Ask your student to gather ten pairs of shoes.



Step 2: Decide to sort the shoes by two characteristics, for example, laces or no laces, or runners or no runners.



Step 3: Ask the student to arrange these two groups of shoes in rows side by side, so that a one-to-one correspondence is shown.



Step 4: Discuss the following questions with the student.

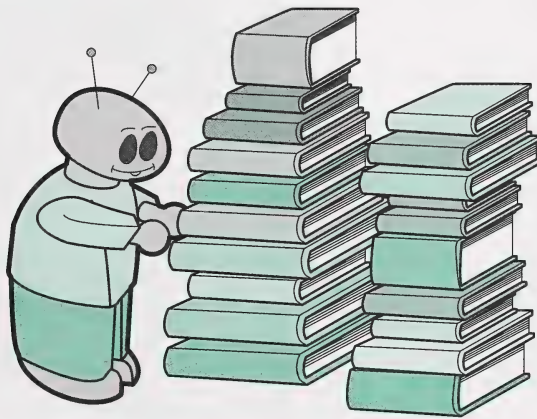
- Which row has the most pairs of shoes in it?
- Why do you think most people like this type of shoe?
- How many pairs of shoes are in each row?
- What is another way we could sort the shoes?
- What other information does the **graph** tell you?

Step 5: Sort the shoes according to another characteristic, such as ladies shoes and mens shoes.

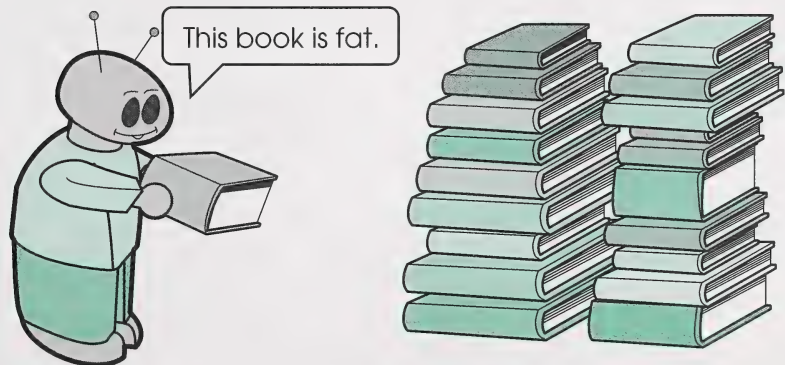


3. Book Sort

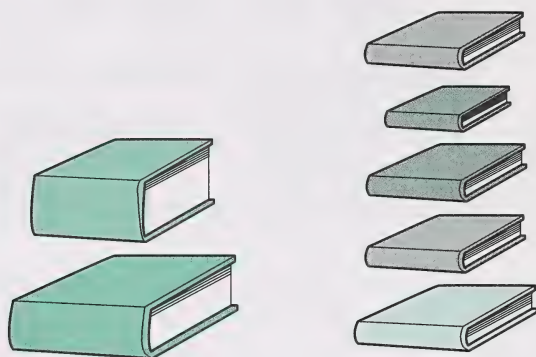
Step 1: Help your student collect 20 books.



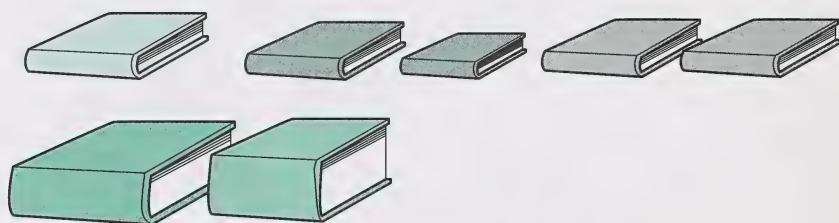
Step 2: Talk about how the books are different from one another.










Step 3: Have the student sort the books according to two or three characteristics (for example, size, colour of cover, or type of book).



Step 4: Help the student to arrange the different kinds of books in rows in a way that shows one-to-one correspondence.

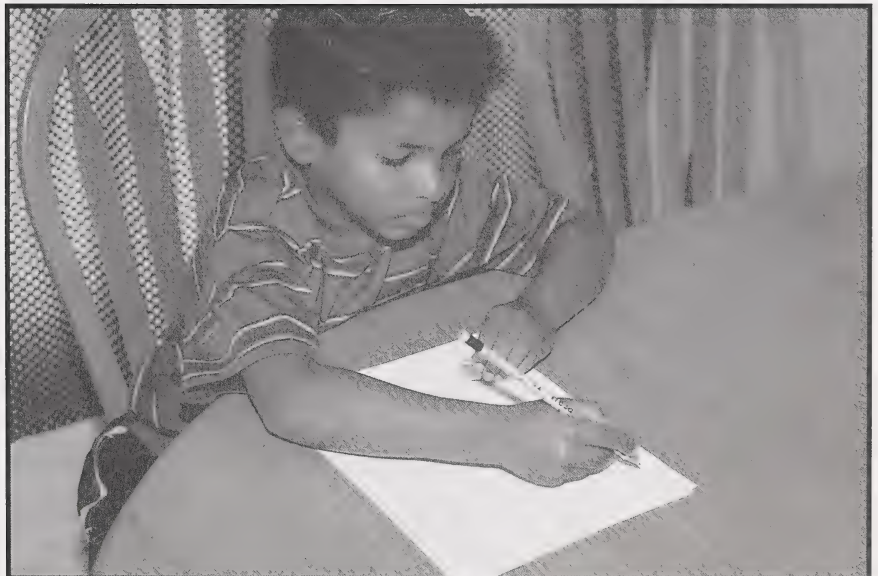
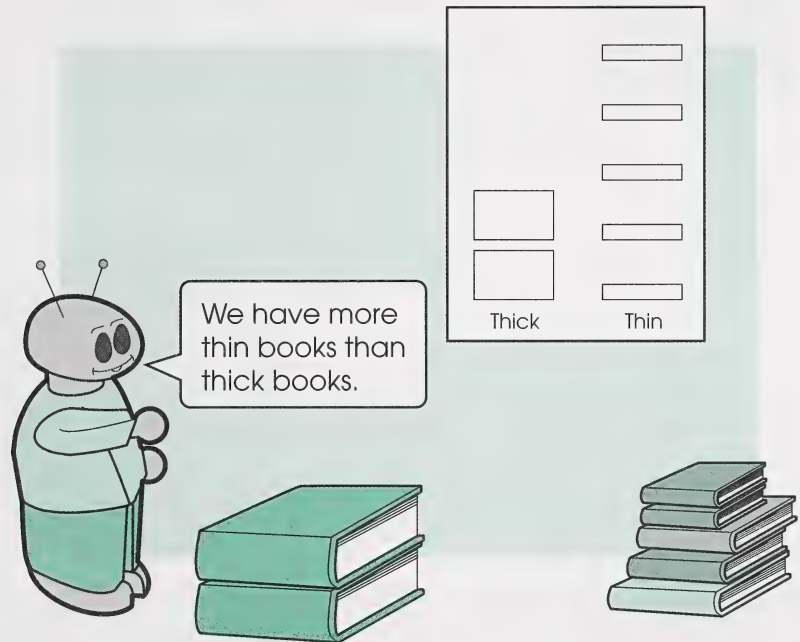


Step 5: On a piece of paper, ask the student to represent the concrete graph as a picture graph.

	
	
	
	
	
Thick	Thin

Step 6: Compare the actual rows of books with the pictures drawn on the paper to check for accuracy.

Step 7: Discuss what information is learned from the graph.



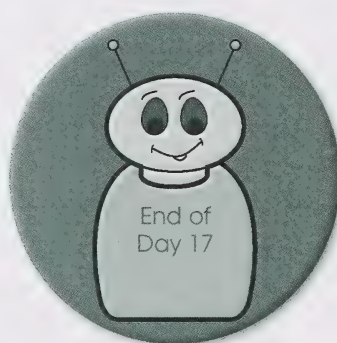
Materials

Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6B, and follow the directions to do the assignment for Day 17.

Then complete Day 17: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning. For example, was it easy or hard to make the picture graph?



Calendar Time



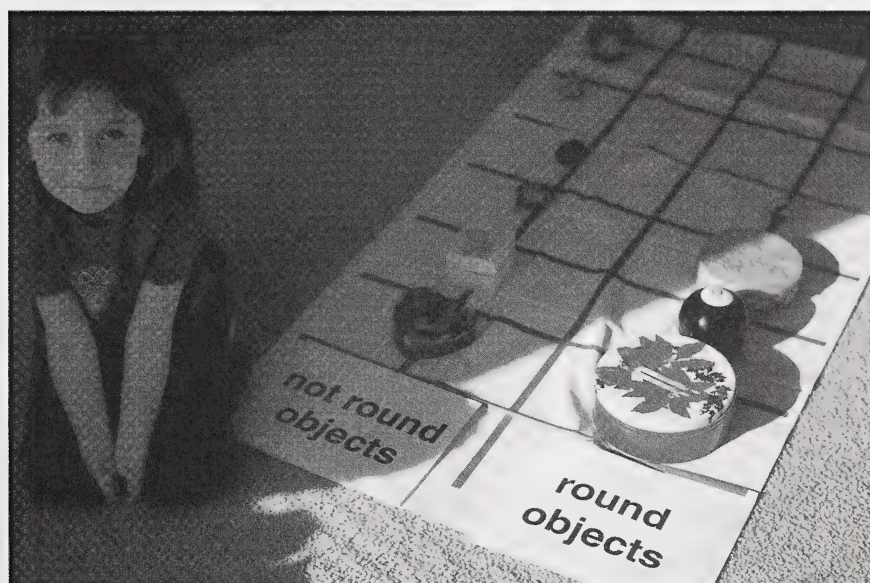
Time recommended: 10 minutes

Begin your lesson with calendar activities as usual.

Focus for Today

Time recommended: 45 minutes

- collect first-hand information by conducting a survey
- construct a picture graph using one-to-one correspondence
- compare data, using appropriate language, including quantitative terms such as **how many more**



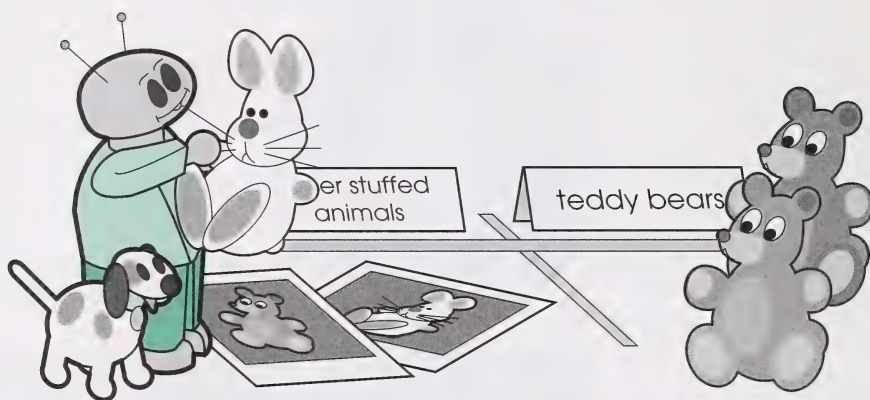
Vocabulary (spoken only)

data management
survey
physical characteristics
sociological characteristics

personal preferences
picture graph
bar graph

Materials Required

- box of required materials from the master list
- necessary materials to construct a picture graph



Developing the Concept

Today your student will continue to work with and develop an understanding of **data management**.



Activities

Teaching Tip



Survey data results from collecting information. The actual data used should depend on the student's interest and developmental level. Generally, survey data collected by the student usually increases interest and encourages persistence in related problem-solving activities.

Examples of the three kinds of data the student will have the opportunity to collect are listed below.

- **physical characteristics**, such as height, weight, colour of eyes, and shoe size
- **sociological characteristics**, such as birthdays, number in family, and amount of allowances
- **personal preferences**, such as favourite television shows, favourite books, favourite sports, favourite colour, and favourite drinks

After the information is collected, graphs are often used to present the information and help the student and others understand the information.

Ask your student to choose a physical or sociological characteristic or a personal preference to survey.

Encourage your student to choose a characteristic or preference that can be presented as a **picture graph** (can be represented by a pictorial symbol).

Choose only two or three characteristics or preferences to survey.



Once the purpose of the survey has been determined, consider some possible questions that you need to answer before proceeding with the survey. For example, if the purpose of the survey is to find out how many cars, buses, or trucks pass by your home, then questions similar to the following can be asked.

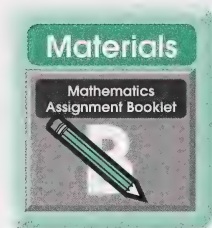


What time will the **survey** start?

How long will the **survey** last?

Are there any other important questions that need to be answered before beginning?

Hint: Toy cars, buses, and trucks could also be used to make a concrete graph of this **survey**.

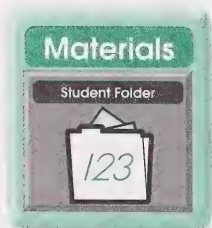


Turn to Mathematics Assignment Booklet 6B, and follow the directions to do Day 18: Assignment 1.

Applying the Concept

Help your student present the information gathered in Developing the Concept as a picture graph similar to the one shown below.

Blue Eyes	● ●	● ●	● ●				
Brown Eyes	● ●	● ●	● ●	● ●	● ●		
Green Eyes	● ●	● ●	● ●	● ●			



Once the picture graph has been constructed, have your student print his or her full name and the abbreviated form of the module and day numbers, M6D18, on the back of the picture graph.

Place this graph in the Student Folder.

Materials

Mathematics
Assignment Booklet



Turn to Mathematics Assignment Booklet 6B and follow the directions to do Day 18: Assignment 2.

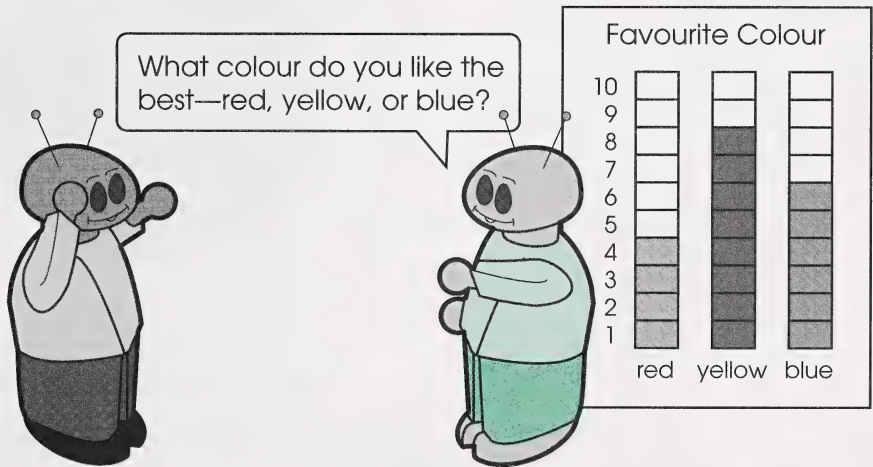
Enrichment (optional)

1. Choose a Survey

Have your student continue to choose physical or sociological characteristics or personal preferences to survey.

Encourage your student to present the information as a concrete graph and picture graph or a **bar graph**.

Choose only two or three characteristics or preferences to survey.



2. Books About Graphing

Anno, Mitsumasa. *Anno's Counting Book*. 1977.

Bogart, Jo Ellen. *10 for Dinner Big Book*. 1989.

Cleaver, Elizabeth. *ABC*. 1984.

Hoban, Tana. *Is It Rough? Is It Smooth? Is It Shiny?* 1984.

Materials

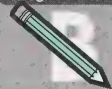
Mathematics
Assignment Booklet



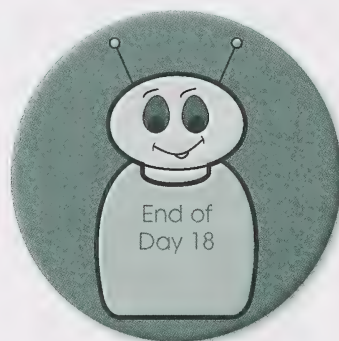
Complete Day 18: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about today's mathematics learning. For example, was it easy or hard to survey people about a characteristic or preference?

Materials

Mathematics
Assignment Booklet



At the end of Mathematics Assignment Booklet 6B, follow the directions to complete Day 18, Student Folder Items. Gather the required materials from your Student Folder. Submit these items to your student's teacher for marking at the time the teacher has requested them.



Congratulations!
You have completed
Mathematics Module 6.

Credits

Contents

Alberta Distance Learning Centre

Page

6	compilation: Gazelle Technologies, Inc.
12	PhotoDisc, Inc.
19	EyeWire, Inc.
31	EyeWire, Inc.
41	PhotoDisc, Inc.
53	PhotoDisc, Inc.
61	EyeWire, Inc.
67	PhotoDisc, Inc.
75	PhotoDisc, Inc.
85	Corel Corporation; insert PhotoDisc, Inc.
97	Alberta Distance Learning Centre
115	Alberta Distance Learning Centre
135	PhotoDisc, Inc.
145	EyeWire, Inc.
152	Alberta Distance Learning Centre
155	EyeWire, Inc.
188	Corbis

